حمل الآن

مجانا وحصريا

امتحانات رقم (1)







1 Cairo Governorate



Shoubra Educational Zone
Mathematics Supervision

First Multiple choice questions



Interactive test ①

Choose the correct answer from the given ones :

(1) If $7^{X} = 4$, then $X =$ ....

(a) $\frac{4}{7}$ (b) $\frac{7}{4}$ (c) $\log_7 4$ (d) $\log_4 7$

(2) The point of symmetry of the curve of the function $f : f(X) = X^3$ is ....

(a) (1 , 1) (b) (0 , 0) (c) (1 , 0) (d) (0 , 1)

(3) If $2^{X-5} = 3^{5-X}$, then $X =$ ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) 0 (d) 5

(4) The curve of the function g : $g(X) = |X + 3|$ is the same curve of the function $f : f(X) = |X|$ by a translation 3 units in the direction of ....

(a) $\overrightarrow{OX}$ (b) $\overleftarrow{OX}$ (c) $\overrightarrow{OY}$ (d) $\overleftarrow{OY}$

(5) If $f(X) = 5^{X}$, then $\frac{f(X+2)}{f(X+1)} =$ ....

(a) 25 (b) 5 (c) 1 (d) $\frac{1}{5}$

(6) $\lim_{x \to 1} \frac{X^2 - 1}{X^2 + 1} =$ ....

(a) 0 (b) 1 (c) 2 (d) doesn't exist.

(7) $\lim_{x \to 3} \frac{X^2 - 8X + 15}{X - 3} =$ ....

(a) 7 (b) 3 (c) 2 (d) -2

(8) The measure of the greatest angle of Δ ABC where : a = 3 cm. , b = 4 cm. , c = 5 cm. equals ....

(a) 90° (b) 60° (c) 30° (d) 120°

(9) In Δ ABC : if a = 7 cm. , then b = ...

(a) $\frac{\sin A}{7 \sin B}$ (b) $\frac{\sin C}{7 \sin B}$ (c) $\frac{7 \sin B}{\sin A}$ (d) $\frac{7 \sin A}{\sin B}$

(10) If f is an even function on the interval $]a , b[$, then b = ...

(a) a (b) $-$ a (c) 2 a (d) a^2

(11) The domain of the function $f(X) = \frac{X - 3}{X^2 - 5X + 6}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{3\}$ (c) $\mathbb{R} - \{-2, -3\}$ (d) $\mathbb{R} - \{2, 3\}$

(12) If $f(X) = 2^X$, then $f(-1) =$ ....

(a) 1 (b) -1 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

(13) If $\left(\frac{1}{2}\right)^X = 8$, then $X =$ ....

(a) -3 (b) 3 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

(14) $\lim_{X \to 1} \frac{X^5 - 1}{X - 1} =$ ....

(a) 20 (b) 5 (c) 4 (d) 1

(15) $\lim_{X \to 4} \frac{X - 4}{\sqrt{5 + X} - 3} =$ ....

(a) 4 (b) 2 (c) 6 (d) 3

(16) If $\lim_{X \to 3} \frac{a}{X + 1} = 2$, then $a =$ ....

(a) 2 (b) 4 (c) 6 (d) 8

(17) The radius length of the circumcircle of Δ ABC in which : m $(\angle A) = 30°$, a = 10 cm. equals .... cm.

(a) 5 (b) 10 (c) 20 (d) 40

(18) In Δ ABC if $a^2 = b^2 + c^2 + bc$, then m $(\angle A) =$ ....

(a) 60° (b) 90° (c) 120° (d) 150°

(19) $\log 25 + \frac{\log 8 \times \log 16}{\log 64} =$ ....

(a) 2 (b) 4 (c) 10 (d) 100

(20) The solution set of the equation : $|2X - 1| = 5$ in $\mathbb{R}$ is ....

(a) $\mathbb{R}$ (b) $[-2, 3]$ (c) $\{3\}$ (d) $\{-2, 3\}$

(21) If $\log 3 = X$, $\log 4 = y$, then $\log 12 =$ ....

(a) $\log X + \log y$ (b) $X - y$ (c) $X + y$ (d) Xy

(22) If $\log_2 X = \frac{1}{3}$, then $\log_2 (8X^3) =$ ....

(a) 1 (b) 4 (c) 2 (d) 3

(23) $\lim_{X \to \infty} \left(3 - \frac{7}{X} + \frac{4}{X^2}\right) =$ ....

(a) ∞ (b) 0 (c) -7 (d) 3

(24) $\lim_{X \to 7} \frac{X^3 - 343}{X^2 - 49} =$ ....

(a) $\frac{21}{2}$ (b) $\frac{2}{21}$ (c) $\frac{3}{2}$ (d) 14

(25) $\lim\limits_{x \to \infty} \frac{2x^2+5x-3}{7-3x^2} = \dots\dots$

(a) $\frac{-3}{7}$ (b) $\frac{-2}{3}$ (c) 0 (d) ∞

(26) In Δ ABC : if a = 3 cm. , b = 4 cm. , c = 6 cm. , then cos C = ……

(a) $\frac{-11}{24}$ (b) $\frac{11}{24}$ (c) $\frac{-11}{12}$ (d) $\frac{11}{12}$

(27) If r is the radius length of the circumcircle of Δ ABC , then $\frac{2\,b}{\sin B} = \dots\dots$

(a) $\frac{1}{2}$ r (b) r (c) 2 r (d) 4 r

Second Essay questions

Answer the following questions :

1 Graph the function $f(x) = x^2 - 3$, then from the graph deduce the range of the function , its monotony and its type whether it is even , odd or otherwise.

2 **Find :** $\lim\limits_{x \to \infty} \frac{16x^{-4}-7x^{-1}-27}{8x^{-4}-9}$

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First Multiple choice questions



Choose the correct answer from the given ones :

(1) The domain of the function $f(x) = \frac{7}{x^3 - x}$ is ……

(a) $\mathbb{R} - \{3\}$ (b) $\mathbb{R} - \{7\}$ (c) $\mathbb{R} - \{0 , 1\}$ (d) $\mathbb{R} - \{0 , -1 , 1\}$

(2) All the following are unspecified quantities except ……

(a) zero ÷ zero (b) $\infty - \infty$ (c) $\infty + \infty$ (d) $\infty \div \infty$

(3) The exponential function of base "a" is increasing function if ……

(a) a > 0 (b) a > 1 (c) 0 < a < 1 (d) a = 1

(4) $\lim\limits_{x \to 3} \frac{2x-6}{7x-21} = \dots\dots$

(a) $\frac{2}{3}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) 3

(5) XYZ is an equilateral triangle the length of its side is $10\sqrt{3}$ cm. , then the length of the diameter of its circumcircle is …… cm.

(a) 5 (b) 10 (c) 15 (d) 20

(6) If $2^{x+1} = 5^{x+1}$, then $3^{x+1} = \dots\dots$

(a) 0 (b) 1 (c) – 1 (d) 3

(7) $\lim\limits_{x \to \infty} \frac{\sqrt{x^2}}{x} = \dots\dots\dots$

(a) zero (b) 1 (c) 2 (d) -1

(8) If $\log_3 x = 2$, then $x = \dots\dots\dots$

(a) 3 (b) 5 (c) 8 (d) 9

(9) $\lim\limits_{x \to 4} \left(3x - \sqrt{x}\right) = \dots\dots\dots$

(a) 8 (b) 10 (c) 14 (d) 16

(10) The domain of the function $f : f(x) = \sqrt{x-3}$ is $\dots\dots\dots$

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{3\}$ (c) $[3, \infty[$ (d) $]-\infty, 3[$

(11) If "r" is the length of the radius of the circumcircle of the triangle XYZ, then $\frac{y}{2 \sin Y} = \dots\dots\dots$

(a) r (b) 2 r (c) $\frac{1}{2}$ r (d) 4 r

(12) If $\log_3 (2x + 3) = 2$, then $x = \dots\dots\dots$

(a) 3 (b) 2 (c) 9 (d) 4

(13) $\lim\limits_{x \to 0} \frac{7 + 2x}{\cos x} = \dots\dots\dots$

(a) 7 (b) 8 (c) 9 (d) 1

(14) The function $f : f(x) = x \cos x$ $\dots\dots\dots$

(a) even. (b) odd.

(c) neither even nor odd. (d) linear.

(15) $\lim\limits_{x \to 2} \frac{x^5 - 32}{x^3 - 8} = \dots\dots\dots$

(a) 4 (b) $\frac{5}{3}$ (c) zero (d) $6\frac{2}{3}$

(16) If ∠ A supplement of ∠ C, then cos A + cos C = $\dots\dots\dots$

(a) zero (b) 1 (c) -1 (d) $\frac{1}{2}$

(17) If $2^x = 4^y = 64$, then $x + y = \dots\dots\dots$

(a) 3 (b) 4 (c) 6 (d) 9

(18) $\lim\limits_{x \to 0} \frac{\sqrt[3]{x+1} - 1}{x} = \dots\dots\dots$

(a) 1 (b) $\frac{1}{3}$ (c) zero (d) $\frac{-2}{3}$

(19) The solution set of $\sqrt{4x^2 - 12x + 9} \le 9$ is $\dots\dots\dots$

(a) $[-6, 12]$ (b) $[-3, 6]$ (c) $\mathbb{R} - [-3, 6]$ (d) $\mathbb{R} -]-3, 6[$

(20) In Δ XYZ : $y^2 + z^2 - x^2 = 2\,y\,z \times \dots\dots\dots$

(a) cos X (b) sin Z (c) cos Z (d) sin X

(21) $\log_2 5 \times \log_5 2 =$ ....

(a) 1 (b) 10 (c) $\log_2 10$ (d) $\log_5 10$

(22) $\lim_{x \to \infty} \left(\frac{3}{x^2} - 2 \right) =$ ....

(a) 3 (b) 2 (c) -3 (d) -2

(23) The symmetric point of the curve of the function $f : f(x) = \frac{1}{x-3} + 4$ is ....

(a) $(3 , -4)$ (b) $(-3 , -4)$ (c) $(3 , 4)$ (d) $(-3 , 4)$

(24) In triangle ABC if a = 5 cm. , b = 7 cm. and m ($\angle$ C) = 65° , then c $\simeq$ .... cm.

(a) 44.4 (b) 32.1 (c) 6.7 (d) 8.2

(25) $\frac{1}{\log_2 14} + \frac{1}{\log_7 14} =$ ....

(a) 1 (b) 2 (c) 7 (d) 14

(26) If the function $f : f(x) = a^x$ passing through the point (1 , 3) , then a = ...

(a) zero (b) 1 (c) -1 (d) 3

(27) In any triangle XYZ , XY : YZ = ...

(a) sin X : sin Y (b) sin Y : sin Z (c) sin Z : sin X (d) sin Z : sin Y

Second Essay questions

Answer the following questions :

1 **Find algebraically in $\mathbb{R}$ the solution set of :** $\sqrt{x^2 - 4x + 4} = 10$

2 **Find the value of :** $\lim_{x \to 2} \frac{x^3 - 8}{x^2 - 5x + 6}$

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Mathematics Inspection

First Multiple choice questions



Interactive test 3

Choose the correct answer from the given ones :

(1) The numerical value of the expression $\frac{\log 64}{\log 8} =$ ....

(a) 2 (b) 8 (c) 80 (d) 72

(2) $\lim_{h \to 0} \frac{(x+h)^7 - x^7}{h} =$ ....

(a) x^7 (b) $7x^6$ (c) zero (d) 1

(3) In Δ ABC : $a^2 + b^2 - c^2 =$ ....

(a) cos A (b) ab cos C (c) cos C (d) 2 ab cos C

(4) If $5^{X} = 17$, then the value of X to the nearest two decimals = ...

(a) 1.34 (b) 1.32 (c) 1.76 (d) 1.67

(5) $\lim_{X \to \infty} \frac{2X - 1}{3X + 1} =$ ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) ∞ (d) $-\infty$

(6) The radius length of the circumcircle of Δ XYZ in which $X = (20 \sin X)$ cm. equals .... cm.

(a) 5 (b) 10 (c) 20 (d) 40

(7) If $f(X) = 5^{X}$, then $f(-2) =$ ....

(a) -2 (b) 5 (c) $\frac{1}{25}$ (d) $\frac{1}{5}$

(8) The range of the function $f : f(X) = \frac{X - 2}{2 - X}$ equals ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{2\}$ (c) $\mathbb{R} - \{-2\}$ (d) $\{-1\}$

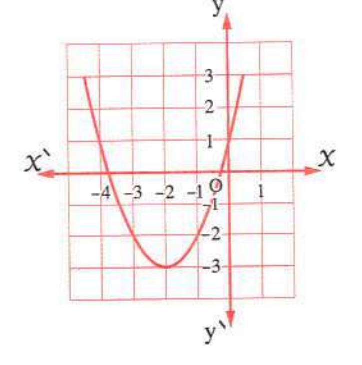
(9) All the following relations represent function y in terms of X except ....

(a) $y = 3X + 1$ (b) $y = X^2 - 4$ (c) $X = y^2 - 2$ (d) $y = \sin X$

(10) The value of $\log_5 49 \times \log_8 5 \times \log_9 8 \times \log_7 9 =$ ....

(a) log 100 (b) log 7 (c) log 5 (d) log 2

(11) The rule of the function represented in the opposite figure is $f(X) =$ ....



(a) $(X + 2)^2 + 3$

(b) $-(X - 2)^2 + 3$

(c) $(X - 1)^2 + 3$

(d) $(X + 2)^2 - 3$

(12) the logarithmic form that is equivalent to the exponential form : $2^7 = 128$ is ....

(a) $\log_2 128 = 7$ (b) $\log_2 7 = 128$ (c) $\log_7 128 = 2$ (d) $\log_7 2 = 128$

(13) The function $f : f(X) = a^{X}$ is increasing if ....

(a) $a > 0$ (b) $a > 1$ (c) $a = 1$ (d) $0 < a < 1$

(14) The solution set in $\mathbb{R}$ of the equation : $|X - 7| = 2$ is ....

(a) $\{9, 5\}$ (b) $\{7, 3\}$ (c) $\varnothing$ (d) $\{3, -3\}$

(15) In Δ ABC , m(∠ C) = 61° , m(∠ B) = 71° , b = 91 cm. , then a ≃ .... cm.

(a) 71 (b) 72 (c) 84 (d) 92

(16) $\lim_{x \to 1} \frac{x^5 - 1}{x - 1} = \dots\dots$

(a) 5 (b) 1 (c) 4 (d) 20

(17) The curve of the even function is symmetric about the straight line ....

(a) $y = x$ (b) $\overleftrightarrow{yy}$ (c) $\overleftrightarrow{xx}$ (d) $y = -x$

(18) If $\lim_{x \to 16} \frac{\sqrt{x} - 1}{x - 16} = \dots\dots$

(a) zero (b) $\frac{1}{2}$ (c) 1 (d) does not exist.

(19) If the perimeter of Δ ABC = 33 cm. , $\sin A + \sin C = \frac{2}{3}$, $\sin B = \frac{1}{4}$, then AC = ... cm.

(a) 6 (b) 9 (c) 12 (d) 15

(20) If $\log 3 = x$, $\log 5 = y$, then $\log 15 = \dots\dots$

(a) xy (b) $\frac{x}{y}$ (c) $x + y$ (d) $x - y$

(21) In Δ ABC , $\frac{a}{a+b} = \frac{\sin A}{\dots\dots}$

(a) sin B (b) sin C (c) sin A + sin B (d) sin A + sin C

(22) The solution set of the equation : $\log_2 x \times \log_3 2 = 1$ in $\mathbb{R}$ is ....

(a) $\{6\}$ (b) $\{5\}$ (c) $\{4\}$ (d) $\{3\}$

(23) $\lim_{x \to 0} \frac{x^7 - 1}{x + 1} = \dots\dots$

(a) -2 (b) 5 (c) 1 (d) -1

(24) The solution set of the following equation in $\mathbb{R}$: $\log_x 81 = 4$ equals ....

(a) $\{-3\}$ (b) $\{3\}$ (c) $\{3, -3\}$ (d) $\{9\}$

(25) $\lim_{x \to a} \frac{a x}{3} = 12$, then a = ...

(a) ± 12 (b) ± 6 (c) 3 (d) -3

(26) In Δ ABC , $m(\angle A) : m(\angle B) : m(\angle C) = 3 : 5 : 4$, then $c^2 : a^2 = \dots\dots$

(a) $\sqrt{6} : 2$ (b) 2 : 3 (c) 4 : 3 (d) 3 : 2

(27) $\lim_{x \to a} \frac{2x - 4}{x - 2} = \dots\dots$

(a) 1 (b) 2 (c) -2 (d) zero

Second Essay questions

Answer the following questions :

1 Graph the function $f : f(x) = x^2 + 1$, from the graph , deduce the range and it's monotony determine it's type whether it is even , odd or otherwise.

2 **Find the value of :** $\lim_{x \to 2} \frac{x^2 - x - 2}{x - 2}$

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Mathematics Inspection

First Multiple choice questions



Interactive test ④

Choose the correct answer from the given ones :

(1) The domain of the function $f(X) = \sqrt{X - 5}$ in $\mathbb{R}$ is ....

(a) $[5, \infty[$ (b) $]5, \infty[$ (c) $]-\infty, 5]$ (d) $]-\infty, 5[$

(2) XYZ is a triangle in which $X = 4$ cm. , $y = 8$ cm. , $m(\angle Z) = 75°$, then $z \simeq$ .... cm.

(a) 6 (b) 7 (c) 8 (d) 9

(3) The solution set of the equation : $|X| + 5 = 0$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{-5\}$ (c) $\{0\}$ (d) $\varnothing$

(4) In the opposite figure :

$\lim_{X \to 2} f(X) =$ ....

(a) -3

(b) 2

(c) -1

(d) does not exist.

(5) If $2^{X+1} = 5^{X+1}$, then $7^{X+1} =$ ....

(a) 1 (b) 49 (c) 7 (d) zero

(6) The vertex of the function $f(X) = (X + 1)^2 - 3$ is ....

(a) $(1, -3)$ (b) $(-1, -3)$ (c) $(1, 3)$ (d) $(-1, 3)$

(7) If $\lim_{X \to \infty} \frac{a X^2 - 5 X}{3 X + 2 X^2} = 4$, then a = ...

(a) 4 (b) 2 (c) 6 (d) 8

(8) The solution set of the equation : $\log_X 81 = 4$ in $\mathbb{R}$ is ....

(a) $\{-3\}$ (b) $\{3\}$ (c) $\{3, -3\}$ (d) $\{9\}$

(9) The radius length of the circle passing through the vertices of triangle XYZ in which $y = 10$ cm. , $m(\angle Y) = 30°$ equals .... cm.

(a) 40 (b) 20 (c) 10 (d) 5

(10) $\lim_{X \to 1} \frac{X^7 - 1}{X - 1} =$ ....

(a) 7 (b) 1 (c) 4 (d) 42

(11) The axis of symmetry of the function $f(x) = x^2 + 3$ is the straight line ....

(a) $x = 3$ (b) $x = 0$ (c) $y = 3$ (d) $y = 0$

(12) If $\log 2 = x$, $\log 5 = y$, then $\log 10 =$ ....

(a) $x + y$ (b) $x - y$ (c) $x y$ (d) $\frac{x}{y}$

(13) If $a \in \mathbb{R}$ and $\lim\limits_{x \to \infty} \frac{(a+3)x^3 - 4x^2 + 4}{2x^2 + 5x - 1} = -2$, then $a =$ ....

(a) -7 (b) -3 (c) zero (d) 3

(14) In triangle ABC if $3 \sin A = 4 \sin B = 6 \sin C$, then $a : b : c =$ ....

(a) $2 : 3 : 4$ (b) $3 : 4 : 6$ (c) $4 : 3 : 2$ (d) $6 : 4 : 3$

(15) The S.S. of the equation : $x^{\frac{2}{3}} = 25$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{-5 , 5\}$ (c) $\{125\}$ (d) $\{-125 , 125\}$

(16) $\log_5 125 + \log 10 + \log_3 (25 + 2) =$ ....

(a) 3 (b) 5 (c) 7 (d) 9

(17) In triangle ABC if $a = 3$ cm. , $b = 5$ cm. , $m(\angle C) = 100°$, then the area of triangle ABC $\simeq$ .... cm^2

(a) 5 (b) 6 (c) 7 (d) 8

(18) $\lim\limits_{x \to 3} \frac{x^2 + 2x - 1}{3x^2 + 1} =$ ....

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $\frac{1}{2}$ (d) 2

(19) If $y = f(x)$ is the curve of a real function , then its image by a translation of magnitude 2 units to the left is $g(x) =$ ....

(a) $f(x + 2)$ (b) $f(x - 2)$ (c) $f(x) + 2$ (d) $f(x) - 2$

(20) $\lim\limits_{x \to 3} \frac{x^2 - 6x + 9}{x - 3} =$ ....

(a) zero (b) 3 (c) 6 (d) does not exist.

(21) In triangle ABC , if $m(\angle B) = 30°$, $c = 12\sqrt{3}$ cm. , $m(\angle C) = 60°$, then $b =$ ....

(a) $6\sqrt{3}$ (b) 6 (c) 9 (d) 12

(22) The function $f(x) = a^x$ is increasing if ....

(a) $a > 0$ (b) $a > 1$ (c) $a = 1$ (d) $0 < a < 1$

(23) $\lim\limits_{h \to 0} \frac{(3 + h)^4 - 81}{h} =$ ....

(a) 4 (b) 81 (c) 108 (d) does not exist.

(24) If ABCD is a cyclic quadrilateral , then $\cos B + \cos D =$ ....

(a) zero (b) 1 (c) $\frac{1}{2}$ (d) -1

(25) If $\log_3 (2X + 3) = 2$, then $X =$ ....

(a) 2 (b) 3 (c) 4 (d) 9

(26) If $\lim\limits_{X \to \infty} (2X^{-3} + 3X^{-4} + a) = 3$, then a = ...

(a) 6 (b) 5 (c) 3 (d) ∞

(27) The S.S. of the equation : $3^{X+1} + 3^X = 12$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{1, 0\}$ (d) $\{2\}$

Second Essay questions

Answer the following questions :

1 Draw the graph of the function $f(X) = (X - 1)^2 + 2$ and from the graph find range of the function and discuss its type for being even , odd or neither.

2 If $\lim\limits_{X \to a} \frac{X^6 - a^6}{X^5 - a^5} = \frac{18}{5}$, then find the value of a

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Aguzza Educational Zone

First Multiple choice questions



Interactive test ⑤

Choose the correct answer from the given ones :

(1) The domain of the function $f(X) = \sqrt{X + 2}$ is ....

(a) $[-2, \infty[$ (b) $]-\infty, -2[$ (c) $\mathbb{R} - \{-2\}$ (d) $\mathbb{R}$

(2) If $\log_a (X - 3) + \log_a (X) = \log_a 4$, then $X =$ ....

(a) -1 (b) 3 (c) 4 (d) -1 , 4

(3) All the functions defined by the following rules are even except ....

(a) $X|X|$ (b) $X^2 \sec X$ (c) $7X^2 + 5$ (d) $\cos X$

(4) The solution set of the equation : $X^{\frac{6}{5}} - 64 = 0$ in $\mathbb{R}$ is ....

(a) $\{-32, 32\}$ (b) $\{32\}$ (c) $\{-8, 8\}$ (d) $\varnothing$

(5) If $f(X) = 3^X$, then the solution set in $\mathbb{R}$ of the equation : $f(X - 2) + f(X - 1) = 36$ is ....

(a) $\{9\}$ (b) $\{4\}$ (c) $\{2\}$ (d) $\{3\}$

(6) The curve $g(X) = |X + 3|$ is the same as the curve $f(X) = |X|$ by translation 3 units in the direction of ....

(a) $\overrightarrow{OX}$ (b) $\overrightarrow{OX'}$ (c) $\overrightarrow{OY}$ (d) $\overrightarrow{OY'}$

(7) The solution set of the inequality : $|3 - 2x| \leq 1$ in $\mathbb{R}$ is ....

(a) $[1, 2]$ (b) $]1, 2[$ (c) $\mathbb{R} -]1, 2[$ (d) $\mathbb{R} - [1, 2]$

(8) The range of the function $f : f(x) = x^2$ is ....

(a) $[0, \infty[$ (b) $]0, \infty[$ (c) $]-\infty, 0]$ (d) $]-\infty, 0[$

(9) The point of symmetry of the function $f : f(x) = \frac{2x - 1}{x}$ is ....

(a) $(1, 1)$ (b) $(2, 1)$ (c) $(1, 2)$ (d) $(0, 2)$

(10) If $5^{x-7} = 4^{7-x}$, then $x =$ ....

(a) $\frac{5}{4}$ (b) 7 (c) $\frac{4}{5}$ (d) zero

(11) The numerical value of the expression $\frac{\log a^b}{\log a^c} =$ ....

(a) $\frac{b}{c}$ (b) a (c) $a^{\frac{b}{c}}$ (d) $b - c$

(12) If $\sqrt[3]{x^2} = 9$, then $x =$ ....

(a) 27 (b) 9 (c) ± 3 (d) ± 27

(13) If $3^{2x} = 5$, then $9^x =$ ....

(a) 10 (b) 25 (c) 5 (d) -5

(14) If $\lim\limits_{x \to 1} \frac{2x + a}{x + 1} = 5$, then $a =$ ....

(a) 2 (b) 5 (c) 8 (d) 10

(15) In the opposite figure :

$\lim\limits_{x \to 2} f(x) =$ ....

(a) 2

(b) -3

(c) 1

(d) does not exist.

(16) $\lim\limits_{x \to 1} \frac{2x - 4}{x - 2} =$ ....

(a) 1 (b) 2 (c) -2 (d) zero

(17) If $\lim\limits_{x \to \infty} \frac{10x^m - 2x + 3}{7x - 2x^3 + 1} = -5$, then $m =$ ....

(a) 4 (b) 3 (c) 1 (d) -5

(18) $\lim\limits_{x \to 1} \frac{b}{x + 1} = 5$, then $b =$ ....

(a) 5 (b) -1 (c) 1 (d) 10

(19) $\lim\limits_{x \to 1} \frac{2x+1}{\sqrt{x+3}-1} = \dots\dots$

(a) 3 (b) -3 (c) 2 (d) does not exist.

(20) $\lim\limits_{x \to 0} \frac{\pi}{4} = \dots\dots$

(a) 0 (b) 45 (c) $\frac{\pi}{4}$ (d) does not exist.

(21) $\lim\limits_{x \to \infty} (2)^{\frac{3}{x}} = \dots\dots$

(a) zero (b) ∞ (c) 1 (d) 2

(22) In Δ XYZ , 3 sin X = 4 sin Y = 2 sin Z , then $x : y : z = \dots\dots$

(a) 2 : 3 : 6 (b) 6 : 2 : 3 (c) 4 : 3 : 6 (d) 3 : 4 : 2

(23) In triangle ABC , m ($\angle$ A) = 45° , then length of the radius of its circumcircle = 6 cm. , then a = ... cm.

(a) 13 (b) $6\sqrt{2}$ (c) 12 (d) $\sqrt{2}$

(24) In triangle ABC , $\frac{a}{a+b} = \frac{\sin A}{\dots\dots}$

(a) sin B (b) sin C (c) sin A + sin B (d) sin A + sin C

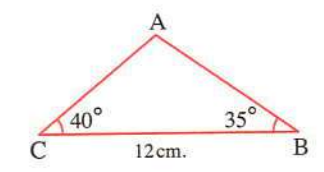
(25) In Δ ABC , $\frac{b}{2r} = \dots\dots$ where r is the length of the radius of the circumcircle of Δ ABC

(a) sin B (b) sin (A + B) (c) sin A + sin B (d) sin A

(26) In Δ ABC , m ($\angle$ A) = 112° , m ($\angle$ B) = 33° , c = 19 cm. , then b $\simeq$ .... to the nearest cm.

(a) 16 (b) 17 (c) 18 (d) 20

(27) **In the opposite figure :**



The length of $\overline{AB} \simeq$ .... to the nearest cm.

(a) 6 (b) 7

(c) 8 (d) 9

Second Essay questions

Answer the following questions :

1 **Find :** $\lim\limits_{x \to -3} \frac{x^6 - 729}{x^3 + 27}$

2 Draw the curve of the function : $f(x) = 3 - (x-1)^2$, from the curve : determine the domain and the range , discuss its monotonicity , determine the type of the function (even , odd or otherwise)

6 **Alexandria Governorate**



Math Inspection

First Multiple choice questions



Choose the correct answer from the given ones :

(1) The domain of the function $f : f(X) = \sqrt{X - 3}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{3\}$ (c) $[3, \infty[$ (d) $]-\infty, 3[$

(2) The range of the function $f : f(X) = \begin{cases} 0 & , X \le 0 \\ 1 & , X > 0 \end{cases}$ is ....

(a) $\{1\}$ (b) $\{0\}$ (c) $\mathbb{R}$ (d) $\{0, 1\}$

(3) The type the function $f : f(X) = \frac{\sin X}{X}$ is ....

(a) even. (b) odd.

(c) neither even nor odd. (d) linear.

(4) The point of symmetry of the curve of the function $f : f(X) = \frac{1}{X - 3} + 4$ is ....

(a) $(3, -4)$ (b) $(-3, -4)$ (c) $(3, 4)$ (d) $(-3, 4)$

(5) The solution set of the equation : $|2X - 4| = |X + 1|$ is ....

(a) $\{1, 5\}$ (b) $\{5, -1\}$ (c) $\{1, -5\}$ (d) $\{-5, -1\}$

(6) If $3^{X - 5} = 9$, then $X =$ ....

(a) -7 (b) -3 (c) 2 (d) 7

(7) $\sqrt[4]{x^4 y^8} =$ ....

(a) $X y^2$ (b) $|X| y^2$ (c) $\pm X y^2$ (d) $X |y^2|$

(8) If $f(X) = (5)^{-X}$, then $\frac{f(X - 1)}{f(X + 1)} =$ ....

(a) 5 (b) $\frac{1}{5}$ (c) 25 (d) $\frac{1}{25}$

(9) An amount of 5000 pounds is deposited in a bank gives a yearly compound interest 5 % for 7 years ≃ .... pounds.

(a) 6750 (b) 7035.5 (c) 5350 (d) 8500

(10) The solution set of the equation $\log_X (3X - 2) = 2$ in $\mathbb{R}$ is ....

(a) $\{1, 2\}$ (b) $\{1\}$ (c) $\{2\}$ (d) $\varnothing$

(11) The curve of the function $f : f(X) = \log_2 X$ is passing through the point (8 , ...)

(a) 2 (b) 3 (c) $\log_2 3$ (d) 256

(12) If $x = 5 + 2\sqrt{6}$, then $\log\left(x + \frac{1}{x}\right) =$ ....

(a) 1 (b) $5 - 2\sqrt{6}$ (c) 10 (d) $5 + 2\sqrt{6}$

(13) If $3^{x} = 5$, then $x =$ ....

(a) 3 (b) $\log_3 5$ (c) $\log_5 3$ (d) $\frac{5}{3}$

(14) $\lim\limits_{x \to 2} \frac{x^2 + x - 6}{x^2 - 4} =$ ....

(a) $\frac{4}{5}$ (b) $\frac{5}{4}$ (c) $\frac{2}{5}$ (d) $-\frac{2}{5}$

(15) $\lim\limits_{x \to 0} \frac{\sqrt{x+1} - 1}{x} =$ ....

(a) zero (b) $\sqrt{2}$ (c) $\frac{1}{2}$ (d) not exist.

(16) If $\lim\limits_{x \to 2} \frac{x^2 - 4a}{x - 2}$ exist , then a = ...

(a) -1 (b) 1 (c) 2 (d) 4

(17) $\lim\limits_{x \to -2} \frac{x^7 + 128}{x^4 - 16} =$ ....

(a) 9 (b) -9 (c) -14 (d) 14

(18) If $\lim\limits_{x \to k} \frac{x^5 - k^5}{x - k} = 80$, then k = ...

(a) 2 (b) -2 (c) ± 2 (d) 16

(19) The $\lim\limits_{x \to \infty} \frac{x^7 - 2x^3}{2x^4 - 3x^2 - 1} =$ ....

(a) zero (b) 3 (c) ∞ (d) $\frac{1}{2}$

(20) $\lim\limits_{x \to \infty} \frac{\sqrt{8 + 9x^2}}{x} =$ ....

(a) $2\sqrt{2}$ (b) 3 (c) $-2\sqrt{2}$ (d) -3

(21) $\lim\limits_{x \to \pi} \frac{\cos 2x}{x} =$ ....

(a) 2 (b) 1 (c) $\frac{1}{\pi}$ (d) zero

(22) DEF is a triangle in which m (∠ D) = 80° and m (∠ E) = 60° , if f = 12 cm. , then d = ... cm.

(a) $\frac{12 \sin 80°}{\sin 40°}$ (b) $\frac{12 \sin 80°}{\sin 60°}$ (c) $\frac{12 \sin 40°}{\sin 80°}$ (d) $\frac{12 \cos 80°}{\cos 40°}$

(23) ABC is a triangle in which $\frac{\sin A}{3} = \frac{\sin B}{5} = \frac{\sin C}{4}$, then a : b : c = ...

(a) 6 : 5 : 8 (b) 8 : 5 : 6 (c) 7 : 2 : 4 (d) 3 : 5 : 4

(24) In Δ LMN , ℓ = 5 cm. , m = 7 cm. , m (∠ N) = 60° , then n = ... cm. (to the nearest tenth)

(a) 6.2 (b) 5 (c) 4.3 (d) 3.5

(25) In Δ XYZ , $y^2 + z^2 - X^2 = 2\,y\,z \times$ ....

(a) cos X (b) sin Z (c) cos Z (d) sin X

(26) The number of possible solutions of Δ XYZ in which $X = 5$ cm. , $y = 6$ cm. , m $(\angle X) = 70°$ equals ....

(a) zero (b) 2 (c) 1 (d) 3

(27) If ABC is a triangle in which $\frac{2}{\sin A} = \frac{3}{\sin B} = \frac{4}{\sin C}$, then the measure of the smallest angle in the triangle $\simeq$ ....

(a) $57° 28'$ (b) $41° 12'$ (c) $28° 57'$ (d) $36° 52'$

Second Essay questions

Answer the following questions :

1 **Find the following limit (show your steps) :** $\lim\limits_{X \to -3} \frac{X^3 - 10X - 3}{X^2 + 2X - 3}$

---

2 **Find algebraically in $\mathbb{R}$ the solution set of the following inequality :** $|X - 5| > 3$

7 El-Kalyoubia Governorate



Math Inspection

First Multiple choice questions



Choose the correct answer from the given ones :

(1) The solution set of the equation $|X| + 4 = 0$ in $\mathbb{R}$ is ....

(a) $\{-4\}$ (b) $\{2\}$ (c) $\{-2 , 2\}$ (d) $\varnothing$

(2) The domain of the function $f(X) = \frac{5}{\sqrt{X - 1}}$ is ....

(a) $\mathbb{R}^+$ (b) $\mathbb{R} - \{1\}$ (c) $\mathbb{R} - \{0\}$ (d) $]1 , \infty[$

(3) The point of symmetry of the function $f(X) = \frac{-1}{X - 3} + 4$ is ....

(a) $(3 , 4)$ (b) $(-3 , 4)$ (c) $(3 , -4)$ (d) $(-3 , -4)$

(4) The solution set of the inequality : $\sqrt{X^2} - 9 < 0$ in $\mathbb{R}$ is ....

(a) $]-3 , 3[$ (b) $]-9 , 9[$ (c) $\{3\}$ (d) $\{9\}$

(5) The range of the function $f(X) = |X - 2| + 3$ is ....

(a) $]-\infty , 2[$ (b) $[2 , \infty[$ (c) $[3 , \infty[$ (d) $[-2 , \infty[$

(6) If $\left(\frac{2}{5}\right)^{x-3} = \frac{5\sqrt{5}}{2\sqrt{2}}$, then $x =$ ....

(a) $\frac{3}{2}$ (b) $\frac{9}{2}$ (c) 6 (d) 3

(7) $\log_{\sqrt{2}} 4 \times \log_{\sqrt{2}} 2 = \log_{\sqrt{2}}$ ....

(a) 8 (b) 16 (c) 32 (d) 64

(8) If $\log 3 = x$ and $\log 4 = y$, then $\log 12 =$ ....

(a) $x + y$ (b) $x y$ (c) $x - y$ (d) $\log x + \log y$

(9) If $f(x) = b^{x}$ is passes through the point (2 , 4) , then b = ...

(a) 2 (b) $\frac{1}{2}$ (c) 4 (d) $\frac{1}{4}$

(10) If $\log_2 x = 3$, then $\log_8 x =$ ....

(a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) 6 (d) 1

(11) If $\sqrt[3]{x^2} = 4$, then $x =$ ....

(a) 8 (b) 16 (c) ± 8 (d) ± 16

(12) $\log_2 12 + \log_2 \frac{2}{3} =$ ....

(a) 2 (b) 3 (c) 5 (d) 8

(13) If $4^{x-2} = 3^{2x-4}$, then $x =$ ....

(a) 2 (b) 3 (c) 4 (d) 5

(14) $\lim\limits_{x \to 2} 5 =$ ....

(a) 10 (b) 7 (c) 5 (d) 2

(15) $\lim\limits_{x \to -2} \frac{1}{x} =$ ....

(a) 1 (b) -1 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

(16) $\lim\limits_{x \to 1} \frac{x^5 - 1}{x^3 - 1} =$ ....

(a) $\frac{5}{3}$ (b) $\frac{-5}{3}$ (c) 15 (d) -15

(17) $\lim\limits_{x \to \infty} \frac{3 - x}{x} =$ ....

(a) -1 (b) 0 (c) 3 (d) undefined.

(18) $\lim\limits_{x \to 1} \frac{x^2 - 1}{x - 1} =$ ....

(a) 0 (b) 1 (c) 2 (d) 3

(19) $\lim\limits_{x \to \infty} \frac{(a-2)x^4 + b x^3 - 5}{3x^3 + 7} = \frac{1}{3}$, then a + b = ...

(a) 2 (b) 3 (c) 4 (d) 5

(20) $\lim\limits_{x \to -3} \frac{x^3 + 27}{x^2 - 9} = \dots\dots$

(a) $\frac{3}{2}$ (b) $\frac{-9}{2}$ (c) $\frac{2}{3}$ (d) $\frac{1}{2}$

(21) $\lim\limits_{x \to \frac{\pi}{2}} \frac{\sin x}{x} = \dots\dots$

(a) 1 (b) $\frac{\pi}{2}$ (c) $\frac{2}{\pi}$ (d) $\frac{1}{90^\circ}$

(22) In Δ ABC , if $\frac{a^2 + b^2 - c^2}{2ab} = 0$, then $\dots\dots$

(a) $m(\angle A) = 60^\circ$ (b) $m(\angle B) = 90^\circ$

(c) $m(\angle C) = 120^\circ$ (d) $m(\angle A) + m(\angle B) = 90^\circ$

(23) In Δ XYZ , if $x = y = 8$ cm. and the perimeter of Δ XYZ = 26 cm. , then $m(\angle Z) \simeq \dots\dots$

(a) 35.3° (b) 52.3° (c) 77.4° (d) 108°

(24) In Δ ABC , if a = 3 cm. , b = 4 cm. , c = 6 cm. , then cos C = $\dots\dots$

(a) $\frac{-11}{24}$ (b) $\frac{-11}{12}$ (c) $\frac{11}{24}$ (d) $\frac{11}{12}$

(25) In Δ ABC , if a = 6 cm. , $m(\angle B) = 2\,m(\angle A) = 80^\circ$, then c = $\dots\dots$

(a) $\frac{6 \sin 40^\circ}{\sin 60^\circ}$ (b) $\frac{\sin 60}{6 \sin 40^\circ}$ (c) $\frac{\sin 40^\circ}{6 \sin 60^\circ}$ (d) $\frac{6 \sin 60^\circ}{\sin 40^\circ}$

(26) If the length of the radius of the circumcircle of Δ ABC = 4 cm. , $m(\angle A) = 30^\circ$, then a = $\dots\dots$ cm.

(a) 2 (b) 4 (c) $2\sqrt{3}$ (d) $4\sqrt{3}$

(27) In Δ ABC , $\frac{\dots\dots}{\sin B + \sin C} = \frac{a}{\sin A}$

(a) b (b) b + c

(c) area of Δ ABC (d) The perimeter of Δ ABC

Second Essay questions

Answer the following questions :

1 Use the curve of $f(x) = \frac{1}{x}$ to represent the curve of $g(x) = 2 + f(x - 1)$, from the graph determine the domain and the range.

2 **Find :**

(1) $\lim\limits_{x \to 5} \frac{x - 5}{\sqrt{x - 1} - 2}$

(2) $\lim\limits_{x \to \infty} \frac{x + 2}{\sqrt{9x^2 + 25}}$

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First Multiple choice questions


Interactive test (8)

Choose the correct answer from the given ones :

(1) The domain of the function $f(X) = \sqrt{X - 4}$ is ....

(a) $[4, \infty[$ (b) $]-\infty, 4[$ (c) $]4, \infty[$ (d) $]-\infty, 4]$

(2) The function which is even from the functions defined by the following rules $f(X) =$ ....

(a) $X \cos X$ (b) $X \sin X$ (c) $X^3 + 1$ (d) $\tan X$

(3) The range of function $f(X) = -|X|$ is ....

(a) $\mathbb{R}$ (b) $]0, \infty[$ (c) $]-\infty, 0[$ (d) $]-\infty, 0]$

(4) The symmetric point of the function $f : f(X) = X^3 - 1$ is ....

(a) $(0, 1)$ (b) $(0, -1)$ (c) $(-1, 1)$ (d) $(0, 0)$

(5) The function $f(X) = (X - 2)^2 + 3$ is increasing on the interval ....

(a) $\mathbb{R}$ (b) $]2, \infty[$ (c) $[-2, 2]$ (d) $]-\infty, 2[$

(6) If $3^{X-5} = 9$, then $X =$ ....

(a) 2 (b) 3 (c) 5 (d) 7

(7) The solution set of the equation $3^{X+1} + 3^X = 12$ in $\mathbb{R}$ is ....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{3\}$ (d) $\{0, 1\}$

(8) The exponential function of base a is increasing if ....

(a) $a > 0$ (b) $a > 1$ (c) $0 < a < 1$ (d) $a = 1$

(9) An amount of 5000 pounds is deposited in a bank gives a yearly compound interest 5 % for 7 years $\simeq$ .... pounds.

(a) 5350 (b) 6750 (c) 7035.5 (d) 8500

(10) If $\log_3 X = 2$, then $X =$ ....

(a) 3 (b) 5 (c) 8 (d) 9

(11) $\log_2 5 \times \log_5 2 =$ ....

(a) 1 (b) 10 (c) log 10 (d) log 7

(12) If $\log X + \log 5 = 2$, then $X =$ ....

(a) 3 (b) 8 (c) 17 (d) 20

(13) The solution set of the equation $\log_{x}(64\,x) = 4$ in $\mathbb{R}$ is ....

(a) $\{2\}$ (b) $\{4\}$ (c) $\{0, 4\}$ (d) $\{6\}$

(14) $\lim\limits_{x \to 4} \left(3\,x - \sqrt{x}\right) =$ ....

(a) 8 (b) 10 (c) 14 (d) 16

(15) $\lim\limits_{x \to 2} \frac{x^3 - 8}{x^2 - 4} =$ ....

(a) 2 (b) 3 (c) 4 (d) 6

(16) $\lim\limits_{x \to 3} \frac{\sqrt{x+1} - 2}{x - 3} =$ ....

(a) $\frac{1}{4}$ (b) 4 (c) $\frac{1}{6}$ (d) 6

(17) $\lim\limits_{x \to 2} \frac{x^5 - 32}{x^3 - 8} =$ ....

(a) zero (b) $\frac{5}{3}$ (c) 4 (d) $6\frac{2}{3}$

(18) $\lim\limits_{x \to 0} \frac{(x^2 + 2)^2 - 4}{4\,x} =$ ....

(a) zero (b) 2 (c) 4 (d) 8

(19) $\lim\limits_{x \to 0} \frac{(x + 1)^9 - 1}{x} =$ ....

(a) zero (b) 1 (c) 9 (d) 10

(20) $\lim\limits_{x \to \infty} (3\,x^{-5} + 4\,x^{-2} + 5) =$ ....

(a) zero (b) 5 (c) 12 (d) ∞

(21) If $\lim\limits_{x \to \infty} \frac{a\,x + 6}{2\,x - 7} = 4$, then a = ...

(a) 2 (b) 4 (c) 6 (d) 8

(22) In Δ ABC if m ($\angle$ A) = 60°, m ($\angle$ B) = 50° and the length of the radius of its circumcircle = 5 cm. then the area of triangle $\simeq$ .... to the nearest cm.^{2}

(a) 9 (b) 12 (c) 31 (d) 62

(23) If ABCD is a cyclic quadrilateral, then cos A + cos C = ...

(a) 1 (b) zero (c) $\frac{1}{2}$ (d) -1

(24) In Δ XYZ, then $2\,x\,z \times$ .... $= x^2 + z^2 - y^2$

(a) cos X (b) cos Y (c) cos Z (d) sin Y

(25) In Δ ABC if a = 4 cm., b = 7 cm., m ($\angle$ C) = 120°, then the area of Δ ABC = ...

(a) 7 (b) $7\sqrt{3}$ (c) 14 (d) $14\sqrt{3}$

(26) In Δ ABC , m ($\angle$ A) = 30° , a = 7 cm. , then the length of diameter of its circumcircle is ....

(a) 7 (b) $7\sqrt{2}$ (c) 14 (d) $14\sqrt{2}$

(27) In Δ ABC if sin A : sin B : sin C = 3 : 4 : 2 , then m ($\angle$ C) $\approx$ .... nearest degree.

(a) 29 (b) 57 (c) 82 (d) 89

Second Essay questions

Answer the following questions :

1 Graph the function $f : f(X) = (X - 2)^2$ determine its type whether it is even , odd or otherwise and deduce the range.

2 If $\lim\limits_{X \to a} \frac{X^8 - a^8}{X^5 - a^5} = 25$ find the value of a

9 El-Dakahlia Governorate



Maths Supervision

First Multiple choice questions



Interactive test (9)

Choose the correct answer from the given ones :

(1) In any triangle XYZ , z : X = ...

(a) sin X : sin Y (b) sin Y : sin Z (c) sin Z : sin X (d) sin Z : sin Y

(2) In Δ ABC , if $\frac{\sin A}{4} = \frac{\sin B}{9} = \frac{\sin C}{7}$, then the greatest angle in measure is ....

(a) $\angle$ A (b) $\angle$ B (c) $\angle$ C (d) right.

(3) In Δ ABC , b = 2 cm. , c = 2.5 cm. , cos A = $\frac{2}{5}$, then the type of Δ ABC according to its sides is ....

(a) a right-angled triangle. (b) an isosceles triangle.

(c) an equilateral triangle. (d) a scalene triangle.

(4) The radius length of the circumcircle of the triangle ABC in which m ($\angle$ A) = 30° , and a = 10 cm. is .... cm.

(a) 5 (b) 10 (c) 20 (d) 40

(5) Δ XYZ is an equilateral triangle , the length of its sides is $10\sqrt{3}$ cm. , then the length of the diameter of its circumcircle is .... cm.

(a) 5 (b) 10 (c) 15 (d) 20

(6) In Δ ABC , $6a = 4b = 3c$, then the measure of the smallest angle in triangle $\simeq$ ....

(a) $57° 28'$ (b) $41° 12'$ (c) $28° 57'$ (d) $36° 52'$

(7) In all the following relation , y is a function in x except ....

(a) $y = 3x + 1$ (b) $y = x^2 - 4$ (c) $y^2 = x - 2$ (d) $y = \sin x$

(8) The domain of the function $f : f(x) = \sqrt{x - 3}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{3\}$ (c) $[3 , \infty[$ (d) $]-\infty , 3]$

(9) The type of function $f : f(x) = \frac{\sin x}{x}$ is ....

(a) even. (b) odd.

(c) linear. (d) neither even nor odd.

(10) The function $f : f(x) = \begin{cases} 2 & , x > 0 \\ -2 & , x < 0 \end{cases}$ is symmetric about the point ....

(a) $(2 , 0)$ (b) $(-2 , 0)$ (c) $(0 , 0)$ (d) $(2 , -2)$

(11) The point of symmetry of the curve of the function $f : f(x) = \frac{1}{x - 3} + 4$ is ....

(a) $(3 , 4)$ (b) $(3 , -4)$ (c) $(-3 , 4)$ (d) $(-3 , -4)$

(12) $\lim\limits_{x \to 3} 15 =$ ....

(a) 4 (b) 45 (c) 15 (d) 18

(13) $\lim\limits_{x \to 2} \frac{x^2 - 4}{x - 2} =$ ....

(a) undefined. (b) 8 (c) -4 (d) 4

(14) $\lim\limits_{x \to 0} \frac{\sqrt{x+1} - 1}{x} =$ ....

(a) zero (b) $\sqrt{2}$ (c) $\frac{1}{2}$ (d) has no existence.

(15) If $\lim\limits_{x \to 2} \frac{a}{x + 1} = 4$, then a = ...

(a) 3 (b) 4 (c) 12 (d) $\frac{2}{3}$

(16) $\lim\limits_{x \to 2} \frac{x^5 - 32}{x^3 - 8} =$ ....

(a) 4 (b) zero (c) $6 \frac{2}{3}$ (d) $\frac{5}{3}$

(17) $\lim\limits_{x \to 0} \frac{(x + 1)^9 - 1}{x} =$ ....

(a) 9 (b) 1 (c) zero (d) 10

(18) $\lim\limits_{x \to \infty} \left(\frac{3}{x^2} - 2\right) =$ ....

(a) 3 (b) 2 (c) -3 (d) -2

(19) $\lim\limits_{x \to \infty} \frac{2x^2 + 1}{x^2 + 1} =$ ....

(a) zero (b) 2 (c) ∞ (d) doesn't exist.

(20) $a^m \times a^m = \dots\dots$

(a) a^{m^2} (b) a^{2m} (c) $2a^m$ (d) $m a^2$

(21) If $3^{x-5} = 9$, then $x = \dots\dots$

(a) -7 (b) -3 (c) 2 (d) 7

(22) Which of the following is not equal to $\sqrt[5]{x^4} = \dots\dots$

(a) $\left(\sqrt[5]{x}\right)^4$ (b) $\sqrt[4]{x^5}$ (c) $x^{\frac{4}{5}}$ (d) $(x^{\frac{1}{5}})^4$

(23) If the curve of the function $f : f(x) = a^x$ passing through $(1 , 3)$, then $a = \dots\dots$

(a) zero (b) 1 (c) -1 (d) 3

(24) $\text{Log}_a x = y$ is equivalent to $\dots\dots$

(a) $\log_a y = x$ (b) $a^y = x$ (c) $a^x = y$ (d) $y = a x$

(25) The solution set of the equation $\log_x (x + 6) = 2$ in $\mathbb{R}$ is $\dots\dots$

(a) $\{3\}$ (b) $\{3 , -2\}$ (c) $\{3 , 1\}$ (d) $\{6 , 1\}$

(26) The curve of the function $f : f(x) = \log_2 x$ passing through the point $(8 , \dots\dots)$

(a) 2 (b) 3 (c) $\log_2 3$ (d) 256

(27) $\frac{1}{\log_2 14} + \frac{1}{\log_7 14} = \dots\dots$

(a) 1 (b) 2 (c) 7 (d) 14

Second Essay questions

Answer the following questions :

1 Draw the curve of the function f where $f(x) = x^2$, $x \in \mathbb{R}$, from graph determine the range and the type of the function (even , odd , or neither even nor odd)

2 **Find :** $\lim\limits_{x \to 2} \frac{x^2 - 4}{x - 2}$

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Maths Inspection

First Multiple choice questions



Interactive test 10

Choose the correct answer from the given ones :

(1) The domain of the function $f : f(x) = \sqrt{x - 5}$ is $\dots\dots$

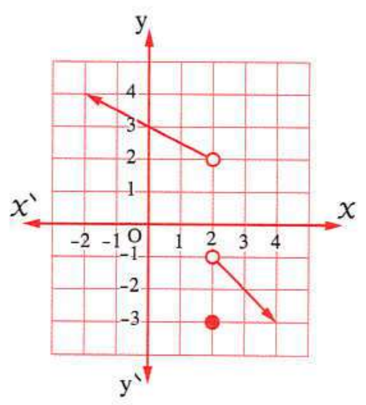
(a) $[5 , \infty[$ (b) $]-\infty , 5]$ (c) $]5 , \infty[$ (d) $[-5 , \infty[$

(2) Which of the functions that are defined by the following rules represents an exponential decay function ?

(a) $f(x) = 2^x$ (b) $f(x) = \left(\frac{1}{3}\right)^{-x}$ (c) $f(x) = 3^x$ (d) $f(x) = \left(\frac{2}{3}\right)^x$

(3) In the opposite figure :

$\lim\limits_{x \to 2} f(x) = \dots\dots$



(a) -3

(b) 2

(c) -1

(d) does not exist.

(4) A circle with diameter of length 20 cm. , passes through the vertices of ΔABC which is an acute-angled triangle in which BC = 10 cm. , then $m(\angle A) = \dots\dots^\circ$

(a) 30 (b) 60 (c) 45 (d) 150

(5) The even function from the functions that are defined by the following rules is ……

(a) $f(x) = x^3$ (b) $g(x) = 3x$ (c) $h(x) = \frac{1}{x}$ (d) $n(x) = x \sin x$

(6) If $2^{x-1} = 7$, then $x \simeq \dots\dots$

(a) 2.81 (b) 3.81 (c) 2.6 (d) 3.6

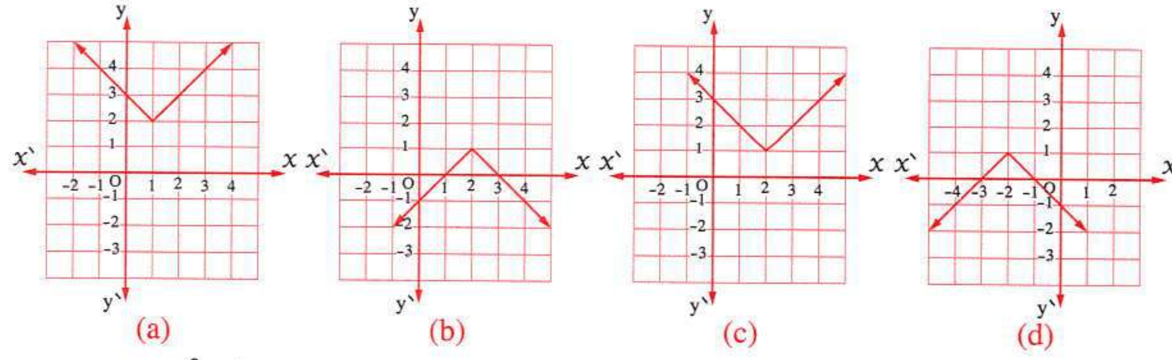
(7) If $\lim\limits_{x \to 3} \frac{x^2 - 2x + k}{x^2 - 9} = m$, where $m \in \mathbb{R}$, then $k \times m = \dots\dots$

(a) $\frac{2}{3}$ (b) -3 (c) -2 (d) -1

(8) In ΔABC , $\frac{2b}{\sin B} = \dots\dots r$ (where r is the radius of its circumcircle)

(a) 1 (b) 2 (c) 4 (d) 8

(9) If $f : f(x) = 1 - |x - 2|$, then the figure which represents the function f is ……



(10) If $\lim\limits_{x \to 3} \frac{x^2 - 2x - a}{x - 3} = 4$, then $a = \dots\dots$

(a) -5 (b) -3 (c) -1 (d) 3

(11) In ΔABC , a = 9 cm. , b = 15 cm. , $m(\angle C) = 106^\circ$, then its perimeter $\simeq \dots\dots$ cm.

(a) 44 (b) 42 (c) 34 (d) 28

(12) The range of the function $f : f(x) = |x|$ is ....

(a) $\mathbb{R}^+$ (b) $\mathbb{R}^-$ (c) $\mathbb{R}$ (d) $[0, \infty[$

(13) $\lim_{x \to 16} \frac{\sqrt[4]{x^5} - 32}{x - 16} =$ ....

(a) 5 (b) $\frac{5}{2}$ (c) $\frac{5}{4}$ (d) $\frac{5}{8}$

(14) The solution set of the equation : $|x| + 2 = 0$ in $\mathbb{R}$ is ....

(a) $\{-3\}$ (b) $\{3\}$ (c) $\{-3, 3\}$ (d) $\varnothing$

(15) $\log_b a \times \log_c b \times \log_d c \times \log_a d =$ ....

(a) zero (b) 1 (c) abcd (d) ad

(16) $\lim_{x \to \infty} (5 + 3^{\frac{1}{x}}) =$ ....

(a) 8 (b) ∞ (c) 5 (d) 6

(17) $\lim_{x \to 0} \frac{1 - \cos \theta}{3 - x} =$ ....

(a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) 1 (d) zero

(18) In ΔABC, if $2 \sin A = 3 \sin B = 4 \sin C$, then $a : b : c =$ ....

(a) $4 : 6 : 3$ (b) $6 : 3 : 4$ (c) $3 : 6 : 4$ (d) $6 : 4 : 3$

(19) The solution set of the equation : $3^x + 3^{2+x} = 90$ in $\mathbb{R}$ is ....

(a) $\{1\}$ (b) $\{2\}$ (c) $\{3\}$ (d) $\{-3\}$

(20) If $\log 3 = x$, $\log 4 = y$, then $\log 12 =$ ....

(a) $x + y$ (b) xy (c) $x - y$ (d) $\log x + \log y$

(21) If ABC is a triangle in which $a = 4$ cm., $b = 4\sqrt{3}$ cm., $c = 8$ cm., then cosine of the smallest angle equals ....

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) 1 (d) zero

(22) If $\lim_{x \to \infty} \frac{4 a x^n - 4x + 5}{3 - 9x + 8x^2} = 3$, then $a + n =$ ....

(a) 8 (b) -8 (c) 9 (d) 4

(23) The straight line $y = 9$ cuts the curve of the function $f : f(x) = 3^x$ at the point ....

(a) $(0, 9)$ (b) $(-2, 9)$ (c) $(2, 9)$ (d) $(1, 9)$

(24) $\lim_{x \to 3} \frac{(x-2)^7 - 1}{x - 3} =$ ....

(a) 7 (b) 14 (c) 2 (d) -2

(25) The solution set in $\mathbb{R}$ of : $\sqrt{x^2 - 6x + 9} < 5$ is ....

(a) $]-5, 5[$ (b) $]-2, 8[$ (c) $]-8, 2[$ (d) $]-2, 5[$

(26) In Δ ABC , if m ($\angle$ B) = 60° , m ($\angle$ C) = 30° , c = 4 cm. , then b = ... cm.

(a) 4 (b) 8 (c) $2\sqrt{3}$ (d) $4\sqrt{3}$

(27) If $\log_3 (2X + 3) = 2$, then X = ...

(a) 3 (b) 2 (c) 9 (d) 4

Second Essay questions

Answer the following questions :

1 Draw the curve of the function $f : f(X) = \frac{1}{X-2} + 1$ **, then from the graph :**

(1) Discuss the monotonicity of f

(2) Determine whether f is even , odd or otherwise.

2 **Find :** $\lim\limits_{X \to 5} \frac{\sqrt{X-1}-2}{X-5}$

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Maths Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The range of the function $f(X) = X - 2$ is ....

(a) $\mathbb{R}^+$ (b) $\mathbb{R}^-$ (c) $\mathbb{R} - \{2\}$ (d) $\mathbb{R}$

(2) The point of symmetry of the curve of the function $f(X) = X^3 + 1$ is ....

(a) (1 , 0) (b) (– 1 , 0) (c) (0 , 1) (d) (0 , – 1)

(3) If $f(X) = 2$, then $f(3)$ = ...

(a) 2 (b) 4 (c) 0 (d) 1

(4) The solution set of the inequality : $|X| \le 2$ in $\mathbb{R}$ is ....

(a) $]-\infty , 2]$ (b) $]-2 , 2]$ (c) $[-2 , 2]$ (d) $]-2 , 2[$

(5) The domain of the function $f(X) = X - 4$ is ....

(a) $[4 , \infty[$ (b) $]4 , \infty[$ (c) $[-\infty , 3[$ (d) $\mathbb{R}$

(6) The solution set of the equation : $X^{\frac{3}{2}} = 8$ in $\mathbb{R}$ is ....

(a) {4} (b) {4 , – 4} (c) {8} (d) {– 8 , 8}

(7) If $3^{X+1} = 5^{X+1}$, then 7^{X+1} = ...

(a) 0 (b) 1 (c) 2 (d) 3

(8) If $f(X) = 3^{X}$, then $f(-1) =$ ....

(a) -1 (b) 1 (c) $\frac{1}{3}$ (d) $\frac{-1}{3}$

(9) If log 3 = a , log 5 = b , then log 15 = ...

(a) ab (b) $\frac{a}{b}$ (c) a + b (d) a − b

(10) If $\log_2 X = 3$, then $X =$ ....

(a) 2 (b) 3 (c) 8 (d) 9

(11) $\log_2 3 \times \log_3 4 \times \log_4 5 \times \log_5 8 =$ ....

(a) 1 (b) 2 (c) 3 (d) 4

(12) The solution set of the equation : $\log_2 X \times \log_3 2 = 4$ is ....

(a) $\{81\}$ (b) $\{4\}$ (c) $\{3\}$ (d) $\{2\}$

(13) If $5^{X} = 17$, then $X \simeq$ .... (to the nearest hundredth)

(a) 1.34 (b) 1.32 (c) 1.76 (d) 1.67

(14) $\lim\limits_{x \to 0} \frac{X^5 - 1}{X + 1} =$ ....

(a) 1 (b) -1 (c) -2 (d) 5

(15) $\lim\limits_{x \to \infty} (3 + 5X^2 + 3X)$ ....

(a) not exist. (b) 5 (c) ∞ (d) 11

(16) $\lim\limits_{x \to 0} (3) =$ ....

(a) 0 (b) 1 (c) 2 (d) 3

(17) $\lim\limits_{x \to \infty} \frac{3X^2 + 4}{X^2 + 5} =$ ....

(a) 3 (b) 4 (c) 5 (d) 1

(18) If $\lim\limits_{x \to 2} \frac{a}{X + 1} = 3$, then a = ...

(a) 6 (b) 8 (c) 9 (d) 12

(19) $\lim\limits_{x \to 2} \frac{X^5 - 32}{X^2 - 4} =$ ....

(a) 20 (b) 40 (c) 60 (d) 80

(20) $\lim\limits_{x \to 2} \frac{X^2 - 4}{X - 2} =$ ....

(a) 4 (b) 2 (c) 0 (d) 8

(21) $\lim\limits_{x \to 0} \frac{\sqrt{X + 4} - 2}{X} =$ ....

(a) 0 (b) 1 (c) $\frac{1}{4}$ (d) 4

(22) In Δ ABC if m (∠ A) = 30° and a = 6 cm. , then $\frac{b}{\sin B}$ = ...

(a) 3 (b) 6 (c) 8 (d) 12

(23) In Δ ABC if 2 sin A = 3 sin B = 4 sin C , then a : b : c = ...

(a) 2 : 3 : 4 (b) 4 : 3 : 2 (c) 3 : 4 : 6 (d) 6 : 4 : 3

(24) The length of the diameter of the circumcircle of the triangle ABC in which b = 12 cm. and m (∠ B) = 90° is .... cm.

(a) 6 (b) 40 (c) 20 (d) 12

(25) In Δ ABC , a : b : c = 3 : 7 : 5 , then the measure of the greatest angle in the triangle ABC is ....°

(a) 60 (b) 30 (c) 90 (d) 120

(26) In Δ ABC : a = 4 cm. , b = 7 cm. and m (∠ C) = 120° , then the area of the triangle = ...

(a) 14 (b) $7\sqrt{3}$ (c) 28 (d) $7\sqrt{2}$

(27) In Δ ABC : a = 10 cm. , b = 10 cm. and m (∠ C) = 120° , then c = ... cm.

(a) 12 (b) 14 (c) $10\sqrt{3}$ (d) 7

Second Essay questions

Answer the following questions :

1 **Find the solution set in ℝ of the equation :** $|2x - 3| = 1$

2 **Find :** $\lim_{x \to -3} \frac{(x+5)^4 - 16}{x+3}$

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Mattay Educational Directorate

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The domain of the function $f : f(x) = 7$ is ....

(a) {7} (b) ℝ (c) ℝ – {7} (d) ℝ – {0}

(2) $f(x) = x + x^3$ = ...

(a) even. (b) odd.

(c) neither even nor odd. (d) anything else.

(3) Symmetric point $f(X) = X^3 - 1$ is ....

(a) (0 , 0) (b) (1 , 0) (c) (0 , 1) (d) (0 , − 1)

(4) Solve the equation : $|X + 2| + 1 = 0$ is ....

(a) $\mathbb{R}$ (b) $\{3\}$ (c) $\{-1\}$ (d) $\varnothing$

(5) Solve the equality : $|X| < 2$ is ....

(a) $\varnothing$ (b) $\mathbb{R} - [-2, 2]$ (c) $]-2, 2[$ (d) $[-2, 2]$

(6) $2^{X+1} = 8$, then $X =$ ....

(a) 8 (b) 2 (c) 3 (d) 4

(7) $\lim\limits_{X \to 1} (7X + 3) =$ ....

(a) 7 (b) 3 (c) 10 (d) 1

(8) If the curve of function $f : f(X) = 5^X$, then $f(3) + f(2) =$ ....

(a) 125 (b) 25 (c) 150 (d) 100

(9) If Δ ABC , in which m ($\angle$ A) = 60° , m ($\angle$ C) = 40° , c = 8.4 cm. , then a ≃ ....

(a) 5.3 (b) 11.3 (c) 22.6 (d) 12

(10) If Δ ABC , which b = 2 r × ....

(a) sin A (b) sin B (c) cos B (d) sin C

(11) In Δ ABC , if 2 sin A = 3 sin B = 4 sin C , then a : b : c = ...

(a) 2 : 3 : 4 (b) 4 : 3 : 2 (c) 3 : 2 : 4 (d) 6 : 4 : 3

(12) In Δ ABC which a = b = 5 cm. , c = 6 cm. , then cos A = ...

(a) 0.4 (b) 0.6 (c) 0.8 (d) 0.2

(13) $\log X - \log 3 = \log 9$, then $X =$ ....

(a) 3 (b) 4 (c) 9 (d) 27

(14) $\log 2 = X$, $\log 3 = y$, then $\log 6 =$ ....

(a) $X + y$ (b) $X y$ (c) $X - y$ (d) $\log X + \log y$

(15) $\lim\limits_{X \to \infty} (5X^{70} + 8X^{30} + 4) =$ ....

(a) 0 (b) 4 (c) 19 (d) ∞

(16) $\log_3 2 = A$, $\log_5 3 = B$, then $A \times B =$ ....

(a) $\log_5 2$ (b) $\log_2 5$ (c) $\log_3 10$ (d) $\log 5$

(17) $\lim\limits_{X \to 4} \left(2X + \sqrt{X}\right)$ ....

(a) 4 (b) 6 (c) 8 (d) 10

(18) $\sqrt{5} \times \sqrt{2} = \sqrt[6]{x}$, then $x =$ ....

(a) 500 (b) 108 (c) 72 (d) 1000

(19) If $\frac{3^x + 2^x + 1}{5^x + 10^x + 15^x} = \frac{1}{25}$, then $x =$ ....

(a) 1 (b) 2 (c) -1 (d) -2

(20) Measure of greatest angle in the triangle whose sides length 7 cm. , 5 cm. , 3 cm. = ...

(a) 120° (b) 150° (c) 60° (d) 30°

(21) Length of diameter in the circumcircle of the triangle ABC which a = 8 sin A is .... unit.

(a) 4 (b) 5 (c) 8 (d) 8 sin A

(22) The solution set of the equation : $4^x + 2^{x+1} = 8$ in $\mathbb{R}$ is ....

(a) $\{1\}$ (b) $\{-1\}$ (c) $\{-2\}$ (d) $\varnothing$

(23) $\lim_{x \to 5} (3 + x) =$ ....

(a) 8 (b) 2 (c) 4 (d) -2

(24) $\lim_{x \to 2} \frac{x^2 - 4}{x - 2} =$ ....

(a) 2 (b) -4 (c) 4 (d) undefined.

(25) $\lim_{x \to 3} \frac{\sqrt{x+1} - 2}{x - 3} =$ ....

(a) $\frac{1}{4}$ (b) $\frac{1}{8}$ (c) 12 (d) 3

(26) $\lim_{x \to \infty} \frac{9x + 5}{3x - 7} =$ ....

(a) 3 (b) 6 (c) 9 (d) ∞

(27) $\lim_{x \to 1} \frac{x^3 - x^2}{x^3 + 1} =$ ....

(a) 0 (b) -1 (c) not exist. (d) $\frac{1}{3}$

Second Essay questions

Answer the following questions :

1 **Represent the function f graphically , then show the range and determine its type whether it is even , odd or otherwise where :** $f(x) = (x - 2)^3 + 1$

2 **Find :** $\lim_{x \to 3} \frac{x^5 - 243}{x - 3}$

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First | Multiple choice questions

Choose the correct answer from the given ones :

(1) The domain of the function $f : f(X) = \frac{2X+1}{X-2}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \left\{-\frac{1}{2}\right\}$ (c) $\mathbb{R} - \left\{-\frac{1}{2}, 2\right\}$ (d) $\mathbb{R} - \{2\}$

(2) If $X^{\frac{3}{2}} = 64$, then $X =$ ....

(a) 512 (b) 16 (c) 4 (d) 2

(3) The type of the function $f : f(X) = \frac{\sin X}{X}$ is ....

(a) even. (b) odd.

(c) neither even nor odd. (d) linear.

(4) $\lim\limits_{X \to 0} (2X^2 + 3) =$ ....

(a) 3 (b) 2 (c) 7 (d) 5

(5) The range of the function $f : f(X) = |X|$ is ....

(a) $[0, \infty[$ (b) $]0, \infty[$ (c) $]-\infty, 0]$ (d) $]-\infty, 0[$

(6) $\lim\limits_{X \to 0} \frac{X^2 - X}{X} =$ ....

(a) zero (b) 1 (c) -1 (d) does not exit.

(7) The vertex point of the cuve of the function $f : f(X) = |X + 3| - 2$ is ....

(a) $(3, 2)$ (b) $(-3, -2)$ (c) $(-3, 2)$ (d) $(3, -2)$

(8) The side length of an equilateral triangle is 9 cm., then the area of its circumcircle equals .... $cm.^2$

(a) 9π (b) 27π (c) 81π (d) 72π

(9) The point of symmetry of the curve of the function $f : f(X) = \frac{1}{X-3} + 4$ is ....

(a) $(3, -4)$ (b) $(-3, -4)$ (c) $(3, 4)$ (d) $(-3, 4)$

(10) $\lim\limits_{X \to 2} \frac{X^3 - 8}{X - 2} =$ ....

(a) 1 (b) 12 (c) 0 (d) 3

(11) The solution set of the inequality $|2X + 3| \le 1$ is ....

(a) $\varnothing$ (b) $[-2, -1]$ (c) $]-2, -1[$ (d) $\mathbb{R}$

(12) $\lim_{x \to \infty} \frac{\sqrt[3]{64x^3 + 7x - 2}}{3x + 2} = \dots\dots$

(a) 4 (b) 3 (c) $\frac{2}{3}$ (d) $\frac{4}{3}$

(13) The solution set of the equation : $|x - 2| = 3$ is ……

(a) $\{2, 3\}$ (b) $\{-1, 5\}$ (c) $]-1, 5[$ (d) $\{5, -5\}$

(14) In Δ ABC , if a = 5 cm. , b = 7 cm. and c = 8 cm. , then m ($\angle$ B) = ……

(a) 90° (b) 80° (c) 70° (d) 60°

(15) If $f(x - 1) = 2^{x+1}$, then $f(x) = \dots\dots$

(a) 2^x (b) 2^{x-1} (c) 2^{x+2} (d) 2^{x-2}

(16) $\lim_{x \to a} \frac{x^n - a^n}{x^m - a^m} = \dots\dots$

(a) $\frac{m}{n}$ (b) $\frac{m}{n}(a)^{m-n}$ (c) $\frac{n}{m}(a)^{m-n}$ (d) $\frac{n}{m}(a)^{n-m}$

(17) The exponential function of base a is increasing if ……

(a) $a > 0$ (b) $a > 1$ (c) $0 < a < 1$ (d) $a = 1$

(18) In triangle ABC : m ($\angle$ A) = 45° , the length of the radius of its circumcircle = 6 cm. , then a = ……

(a) 13 (b) $6\sqrt{2}$ (c) 12 (d) $\sqrt{2}$

(19) If $5^{x-3} = 4^{x-3}$, then $x = \dots\dots$

(a) 4 (b) 3 (c) 1 (d) zero

(20) In Δ LMN , $\frac{\ell}{\sin L} = \dots\dots$

(a) $\frac{m}{\sin N}$ (b) $\frac{n}{\sin N}$ (c) $\frac{m}{\sin L}$ (d) 3 r

(21) If $\log_3 (2x + 3) = 2$, then $x = \dots\dots$

(a) 3 (b) 2 (c) 9 (d) 4

(22) $\lim_{x \to 5} \frac{x^2 - 25}{x - 5} = \dots\dots$

(a) 10 (b) 2 (c) 5 (d) 4

(23) If $\log_2 x + \log_2 x^2 = 6$, then $x = \dots\dots$

(a) 2 (b) 4 (c) 6 (d) 216

(24) In Δ ABC , m ($\angle$ A) = 30° , $b = 15\sqrt{3}$, m ($\angle$ B) = 60° , then a = ……

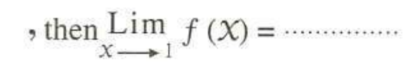
(a) 30 (b) 45 (c) 15 (d) 60

(25) In Δ ABC : $a^2 + b^2 - c^2 = \dots\dots$

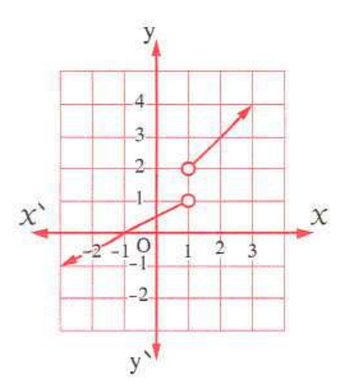
(a) cos A (b) ab cos C (c) cos C (d) 2 ab cos C

(26) In the opposite figure :

The graph of function f



, then $\lim\limits_{x \to 1} f(x) =$ ....



(a) 2

(b) 3

(c) 1

(d) not exist.

(27) By solving the triangle ABC in which a = 5 cm. , b = 7 cm. , m ($\angle$ C) = 65°

, then c $\simeq$ .... cm.

(a) 4.4 (b) 2.1 (c) 6.7 (d) 8.2

Second Essay questions

Answer the following questions :

1 Draw the graph of the function $f : f(x) = \begin{cases} x^2 & , x < 0 \\ x & , x \geq 0 \end{cases}$ and deduce from the graph its range and its type of being odd , even of otherwise.

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2 **Find the S.S. of the equation :** $\log_x 81 = 4$

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Mathematics Inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) Solution set of inequality : $|x + 2| \leq 3$ in $\mathbb{R}$ is ....

(a) $\mathbb{R}$ (b) $\varnothing$ (c) $[-5 , 1]$ (d) $]-5 , 1[$

(2) In Δ ABC if a = 4 cm. , m ($\angle$ A) = 30° , then length radius of circumcircle Δ ABC = ... cm.

(a) 4 (b) 2 (c) 12 (d) 24

(3) Domain of function $f : f(X) = \sqrt[3]{X-2}$ is ....

(a) $[-2, \infty[$ (b) $[-2, 2]$ (c) $]-\infty, 2]$ (d) $\mathbb{R}$

(4) $\lim\limits_{X \to \infty} \left(\frac{X}{2-X^2}\right) =$ ....

(a) 0 (b) $\frac{1}{2}$ (c) 2 (d) -1

(5) If $\log 2 = X$, $\log 3 = y$, then $\log 6 =$ ....

(a) $X y$ (b) $X \div y$ (c) $X + y$ (d) X^y

(6) $\lim\limits_{X \to -3} \left(\frac{X^2+4X+3}{X^2-9}\right) =$ ....

(a) 2 (b) 0 (c) $\frac{-1}{3}$ (d) $\frac{1}{3}$

(7) In Δ ABC if a = 5 cm. , m ($\angle$ B) = 120° and surface area of Δ ABC = $10\sqrt{3}$ cm^2, then c = ... cm.

(a) 5 (b) 8 (c) 7.2 (d) 10

(8) If $5^X = 2$, then $5^{X+2} =$ ....

(a) 5 (b) 2 (c) 25 (d) 50

(9) In Δ XYZ if X = 5 cm. , y = 7 cm. , z = 8 cm. , then m ($\angle$ Y) = ...

(a) 30° (b) 60° (c) 45° (d) 120°

(10) Solution set of equation : $X^{\frac{7}{2}} = 128$ in $\mathbb{R}$ is ....

(a) $\{4\}$ (b) $\{7\}$ (c) $\{2\}$ (d) $\{\pm 4\}$

(11) $\lim\limits_{X \to 0} \left(\frac{X^2+2X}{X}\right) =$ ....

(a) -2 (b) 2 (c) 0 (d) 1

(12) Point vertex curve of function $f : f(X) = (X+2)^2 + 1$ is ....

(a) $(-2, 1)$ (b) $(2, 1)$ (c) $(-2, -1)$ (d) $(2, -1)$

(13) $\log_2 6 \times \log_6 2 =$ ....

(a) 0 (b) 2 (c) 1 (d) 3

(14) In Δ ABC if : 3 sin A = 6 sin B = 4 sin C , then a : b : c = ...

(a) 3 : 4 : 6 (b) 2 : 3 : 4 (c) 3 : 6 : 4 (d) 4 : 2 : 3

(15) The curve of function $f : f(X) = \frac{1}{X+1}$ symmetry around point ....

(a) $(-1, 0)$ (b) $(0, 1)$ (c) $(0, 0)$ (d) $(1, 0)$

(16) $\lim\limits_{X \to 1} \frac{X^4-1}{X^2-1} =$ ....

(a) 6 (b) 3 (c) 2 (d) 1

(17) If $\log x \in]0 , 1[$, then $x \in$ ....

(a) $]1 , 2[$ (b) $]0 , 1[$ (c) $]1 , 10[$ (d) $]1 , \infty[$

(18) $\lim\limits_{x \to 1} (10) =$ ....

(a) 1 (b) 0 (c) – 10 (d) 10

(19) In Δ DEF if , m (∠ E) = 35° , m (∠ F) = 40° , EF = 12 cm. , then ED ≃ .... to nearest centimeter.

(a) 2 (b) 3 (c) 8 (d) $\sqrt{3}$

(20) In Δ ABC if AB = 3 cm. , BC = 5 cm. , m (∠ B) = 120° , then AC = ... cm.

(a) 8 (b) 7 (c) 9 (d) 4

(21) Which of following functions represent an even function ....

(a) $f(x) = x^4 + 1$ (b) $f(x) = x^3 + 1$ (c) $f(x) = x \cos x$ (d) $f(x) = x^2 \sin x$

(22) $\lim\limits_{n \to \infty} \frac{5x^{-3} + x^{-1} + 5}{2x^{-3} + 2x^{-1} + 7} =$ ....

(a) $\frac{5}{7}$ (b) $\frac{7}{5}$ (c) $\frac{1}{2}$ (d) $\frac{5}{2}$

(23) Function f where $f(x) = a^x$ is increase on its domain when ....

(a) a = 1 (b) a > 1 (c) a = – 1 (d) 0 < a < 1

(24) $\lim\limits_{x \to 2} \frac{2x^2 - x - k}{x^2 - x - 2} = \frac{7}{3}$, then k = ...

(a) 2 (b) 7 (c) – 6 (d) 6

(25) $\lim\limits_{x \to 0} \frac{(x+2)^5 - 32}{x} =$ ....

(a) 4 (b) 16 (c) 32 (d) 80

(26) If $\log_4 (x + 1) = 1$, then $x =$ ....

(a) 3 (b) 4 (c) 2 (d) 1

(27) If $f(x) = 3^x$, then solution set of equation : $f(x+1) - f(x-1) = 24$ is ....

(a) {2} (b) {3} (c) {8} (d) {0}

Second Essay questions

Answer the following questions :

1 Represent graphically function $f : f(x) = (x - 1)^3 + 2$ from drawing determine the range of the function and discuss its monotonicity.

2 **Find value of :** $\lim\limits_{x \to 0} \frac{\sqrt{1+x} - 1}{x}$



كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4
اختيار نوع الورق

خطوة 5
اختيار A4

خطوة 6

حمل الان

مجانا وحصريا

امتحانات رقم (2)







1 Cairo Governorate



Mathematics Department
Futures Language Schools

First Multiple choice questions

Choose the correct answer from the given ones :

(1) If f is an odd function , a $\in$ the domain of f , then f (a) + f (– a) = ...

(a) 2 (a) (b) 2 (– a) (c) zero (d) (a)

(2) If $f(X) = \sqrt{X+4}$, $g(X) = \sqrt{6-X}$, then $(f+g)(5)$ = ...

(a) undefined (b) zero (c) 5 (d) 4

(3) The domain of the function $f : f(X) = \begin{cases} X+3 & , X > 3 \\ 6 & , X < 3 \end{cases}$ is ....

(a) $\{3\}$ (b) $\mathbb{R} - \{3\}$ (c) $[3 , \infty[$ (d) $\mathbb{R}$

(4) If $y = f(X)$ is a real function , then its image by translation 3 units right is $g(X)$ = ...

(a) $f(X-3)$ (b) $f(X+3)$ (c) $f(X)+3$ (d) $f(X)-3$

(5) The solution set of the equation : $\log_5 y = 2$ in $\mathbb{R}$ is ....

(a) $\{25\}$ (b) $\{25 , 625\}$ (c) $\left\{\frac{1}{25} , 625\right\}$ (d) $\{125 , 625\}$

(6) If $\log_2 X = 3$, then $\log_X 2$ = ...

(a) 2 (b) $\frac{1}{3}$ (c) 8 (d) 9

(7) If $5^{X+1} = 7^{X+1}$, then 3^{X+1} = ...

(a) zero (b) 3 (c) 2 (d) 1

(8) Solution set of the equation : $\log_X (X+6) = 2$ in $\mathbb{R}$ is ....

(a) $\{3 , -2\}$ (b) $\{3\}$ (c) $\{3 , 1\}$ (d) $\{6 , 1\}$

(9) The domain of the function : $f(X) = \frac{1}{X^2-4}$ is ....

(a) $\{2 , -2\}$ (b) $[2 , -2]$ (c) $\mathbb{R} - [2 , -2]$ (d) $\mathbb{R} - \{2 , -2\}$

(10) The solution set of the inequality : $|X-3| < 6$ is ....

(a) $]-1 , 7[$ (b) $\mathbb{R} - [-3 , 9]$ (c) $\mathbb{R} - [-1 , 7]$ (d) $]-3 , 9[$

(11) If $2^{X+1} = 8$, then X = ...

(a) 3 (b) 2 (c) – 3 (d) – 2

(12) The function f where $f(X) = a^X$ is decreasing on its domain if ....

(a) a = 1 (b) a > 1 (c) 0 < a < 1 (d) a = – 1

(13) If $3^a = 4$, then $9^a =$ ....

(a) 7 (b) 12 (c) 16 (d) 25

(14) The equation of axis of symmetry of the curve of the function $f : f(X) = |X + 3| - 2$ is ....

(a) $X = -3$ (b) $X = -2$ (c) $y = -3$ (d) $y = -2$

(15) $\lim\limits_{X \to 0} \frac{\sqrt{X+1} - 1}{X} =$ ....

(a) $\frac{1}{2}$ (b) 2 (c) zero (d) 1

(16) $\lim\limits_{X \to \infty} X^{-5} =$ ....

(a) ∞ (b) -5 (c) 5 (d) zero

(17) $\lim\limits_{X \to 1} \frac{X^2 - X}{X^3 - 1} =$ ....

(a) zero (b) $-\frac{1}{3}$ (c) $\frac{1}{3}$ (d) does not exist.

(18) $\lim\limits_{X \to \infty} \frac{X^{-3} + 3X^{-2} + 1}{X^{-2} + X^{-1} + 3} =$ ....

(a) 2 (b) 1 (c) 3 (d) $\frac{1}{3}$

(19) $\lim\limits_{X \to 3} \frac{(X-6)^2 - 9}{X^2 - 9} =$ ....

(a) -1 (b) 3 (c) 1 (d) 2

(20) $\lim\limits_{X \to 1} \frac{X^2 + 5X - 6}{X^2 - 1} =$ ....

(a) 1 (b) 5 (c) 6 (d) 3.5

(21) In Δ ABC , $b^2 + c^2 - a^2 = 2\,bc \times$ ....

(a) cos A (b) sin A (c) cos C (d) cos B

(22) In triangle ABC If : $\frac{a}{\sin A} = 6$ cm. , then the circumference of the circumcircle of triangle = ...

(a) 12π (b) 6π (c) 5π (d) 9π

(23) In Δ ABC , c = 7 cm. , $m(\angle A) = 70°$, $m(\angle B) = 40$, then b $\simeq$ .... cm.

(a) 3.7 (b) 4.8 (c) 8.4 (d) 7.3

(24) If ABC is a triangle in which a = 4 cm. , $b = 4\sqrt{3}$ cm. , c = 8 cm. , then the measure of the smallest angle equals ....

(a) 60° (b) 30° (c) 90° (d) 120°

(25) The diameter length of the circle inscribed in an equilateral triangle whose side length is $4\sqrt{3}$ cm. equals .... cm.

(a) 8 (b) $4\sqrt{3}$ (c) 4 (d) $2\sqrt{3}$

(26) In Δ ABC , if 2 sin A = 3 sin B = 4 sin C , then a : b : c = ...

(a) 6 : 4 : 3 (b) 4 : 3 : 2 (c) 3 : 4 : 6 (d) 2 : 3 : 4

(27) In Δ ABC , if m ($\angle$ B) = 60° , m ($\angle$ C) = 30° , c = 4 cm. , then b = ... cm.

(a) 4 (b) 8 (c) $2\sqrt{3}$ (d) $4\sqrt{3}$

(28) ABCD is a parallelogram in which : AB = 9 cm. , BC = 13 cm. , AC = 20 cm. , then the length of BD equals .... cm.

(a) 10 (b) 5 (c) 18.5 (d) 20

Second Essay questions

Answer the following questions :

1 **Find :** $\lim\limits_{x \to 1} \frac{x^3 - 2x + 1}{x^2 + x - 2}$

2 **Write the steps to find :** $\lim\limits_{x \to 3} \frac{\sqrt{x+1} - 2}{x - 3}$

3 If $f(x) = x^2 - 1$ graph the function showing its domain , range , and monotony

4 If $f(x) = 7^x$, then find the value of x satisfying $f(2x - 1) + f(2x + 1) = \frac{50}{49}$

2 Cairo Governorate  El Sherouk Zone El-Golf Distinguished Governmental School

First Multiple choice questions

Choose the correct answer from the given ones :

(1) In Δ ABC , if m ($\angle$ B) = 60° , m ($\angle$ C) = 30° and c = 4 cm. , then a = ... cm.

(a) 2 (b) 4 (c) 8 (d) $4\sqrt{3}$

(2) The point of symmetry of the function $f : f(x) = \frac{2x - 1}{x}$ is ....

(a) (2 , 0) (b) (0 , 2) (c) (– 2 , 0) (d) (2 , – 1)

(3) The solution set of $|2x - 3| \leq 3$ in $\mathbb{R}$ is ....

(a) $[-3 , 3]$ (b) $]-3 , 3[$ (c) $[0 , 6]$ (d) $[0 , 3]$

(4) $\lim\limits_{h \to 0} \frac{(x + h)^7 - x^7}{h} =$ ....

(a) $7x^6$ (b) $6x^7$ (c) $7h^6$ (d) $7h^7$

(5) In Δ ABC , if $b^2 = c^2 + a^2 - ac$, then m ($\angle$ B) = ...

(a) 30° (b) 45° (c) 60° (d) 120°

(6) $5^{x-3} = 4^{3-x}$, then $x =$ ....

(a) 3 (b) 4 (c) 5 (d) 0

(7) The range of the function $f : f(x) = \begin{cases} 1 & , x \le 0 \\ 0 & , x > 0 \end{cases}$

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{0 , 1\}$ (c) $\{0 , 1\}$ (d) $\mathbb{R} - [0 , 1]$

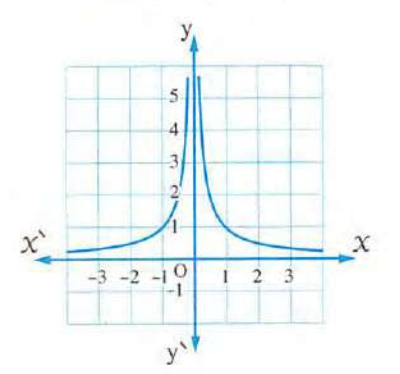
(8) The opposite figure represents $f : f(x) =$ ....

(a) $\frac{1}{x}$

(b) $-\frac{1}{x}$

(c) $\frac{1}{|x|}$

(d) $\frac{1}{x} + 5$



(9) In Δ XYZ , $x = 5$ cm. , y = 7 cm. , m ($\angle$ Z) = 65° , then z $\simeq$ .... cm.

(a) 5.7 (b) 6.7 (c) 7.5 (d) 44

(10) If $\log_{x} 2 = 3$, then $\log_{2} x =$ ....

(a) x (b) 1 (c) $\frac{1}{3}$ (d) 3

(11) The solution set of $|x| + 3 = 1$ in $\mathbb{R}$ is ....

(a) $\{2\}$ (b) $\{-2\}$ (c) $\{-2 , 2\}$ (d) $\varnothing$

(12) $\lim\limits_{y \to 2} \frac{y^5 - 32}{y^2 - 4} =$ ....

(a) 20 (b) 40 (c) 60 (d) 80

(13) If the curve of the function $f : f(x) = \log_4 (1 - a x)$ passes through the point $\left(\frac{1}{8} , -\frac{1}{2}\right)$, then a = ...

(a) 1 (b) 2 (c) 3 (d) 4

(14) The domain of the function $f : f(x) = \sqrt{9 - x}$ is ....

(a) $[9 , \infty[$ (b) $]-\infty , 9]$ (c) $[-9 , \infty[$ (d) $\mathbb{R}$

(15) In Δ XYZ , sin X = 2 sin Z and YZ = 6 cm. , then XY = ...

(a) 3 (b) 6 (c) $3\sqrt{6}$ (d) 12

(16) $\lim\limits_{x \to \infty} \frac{6x^2 - 3x + 6}{1 + 4x + 2x^2} =$ ....

(a) 0 (b) 3 (c) 4 (d) 6

(17) If f is an odd function and a $\in$ its domain , then $f(a) + f(-a) =$ ....

(a) 0 (b) 2 (c) $2 f(a)$ (d) $f(a)$

(18) $f(X) = 2^{1-X}$, then $f(-1) =$ ....

(a) 0 (b) 1 (c) 2 (d) 4

(19) $\lim_{X \to 3} \frac{\sqrt{X+1}-2}{X-3} =$ ....

(a) 0 (b) $\frac{1}{4}$ (c) $\frac{2}{3}$ (d) does not exist.

(20) $f(X) = 3^{X+1}$, then $f(X+1) \times f(-X) =$ ....

(a) 1 (b) 3 (c) 9 (d) 27

(21) The side length of an equilateral triangle is 9 cm. , then the area of its circumcircle equals .... cm^2.

(a) 9π (b) 27π (c) 81π (d) 72π

(22) The opposite figure represents the curve of the function f , then $\lim_{X \to 0} f(X) =$ ....

(a) 1

(b) 4

(c) 0

(d) does not exist.

(23) If $\lim_{X \to 2} \frac{aX}{3} = 6$, then a = ...

(a) 1 (b) 4 (c) 6 (d) 9

(24) In Δ ABC , if b = c , then cos C = ...

(a) c (b) $\frac{a}{b}$ (c) $\frac{a}{2b}$ (d) $\frac{b}{2a}$

(25) If $\log_2 X = 5$, then the exponential form of it is ....

(a) $X^2 = 5$ (b) $2^5 = X$ (c) $5^2 = X$ (d) $X^5 = 2$

(26) In Δ ABC , if m ($\angle$ A) = 110° , m ($\angle$ B) = 34° , c = 19 cm. , then b to nearest cm. = ... cm.

(a) 14 (b) 18 (c) 19.8 (d) 30.4

(27) $\lim_{X \to \infty} \frac{6}{3X^2} + \frac{8X}{2+X} =$ ....

(a) 2 (b) 4 (c) 6 (d) 8

(28) If log 3 = X and log 4 = y , then log 12 = ...

(a) $X - y$ (b) $X + y$ (c) $X y$ (d) $\frac{X}{y}$

Second Essay questions

Answer the following questions :

1 **Find :** $\lim_{X \to 2} \frac{X^2 - 5X + 6}{X^2 - 4}$

2 Graph the function $f : f(X) = \begin{cases} |X| & , X \leq 0 \\ X^3 & , X > 0 \end{cases}$, then

(1) deduce its range. (2) discuss the monotony.

3 **Find :** $\lim\limits_{X \to 1} \frac{(X+1)^5 - 32}{X - 1}$

4 **Find the solution set of :** $3^{X+2} - 3^{X+1} = 18$ in $\mathbb{R}$

3 **Cairo Governorate**  **Ain Shams Educational directorate**

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The type of the function $f : f(X) = \frac{\sin X}{X}$ is ....

(a) even. (b) odd.

(c) neither even nor odd. (d) linear.

(2) The domain of the function $f : f(X) = \frac{2X+1}{X-2}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \left\{-\frac{1}{2}\right\}$ (c) $\mathbb{R} - \left\{-\frac{1}{2}, 2\right\}$ (d) $\mathbb{R} - \{2\}$

(3) $1 + \log 2 =$ ....

(a) $\log 5$ (b) $\log 2$ (c) $\log 20$ (d) $-\log 5$

(4) In Δ XYZ , $y^2 + z^2 - X^2 = 2\,y\,z \times$ ....

(a) cos X (b) sin Z (c) cos Z (d) sin X

(5) $\lim\limits_{X \to \infty} \frac{3X}{4X+5} =$ ....

(a) ∞ (b) $\frac{3}{4}$ (c) $\frac{1}{5}$ (d) zero

(6) The set of the real roots of the equation $(X-2)^4 = 16$ equals ....

(a) $\{0\}$ (b) $\{4\}$ (c) $\{8\}$ (d) $\{0, 4\}$

(7) The range of the function $f : f(X) = |X - 2|$ is ....

(a) $]-\infty, 2[$ (b) $[-2, \infty[$ (c) $[0, \infty[$ (d) $]2, \infty[$

(8) If $\log X - \log 2 = \log 4$, then $X =$ ....

(a) 4 (b) 6 (c) 8 (d) 16

(9) $\lim\limits_{X \to 2} \frac{X^5 - 32}{X^3 - 2^3} =$ ....

(a) 4 (b) $\frac{5}{3}$ (c) zero (d) $6\frac{2}{3}$

(10) In Δ ABC , $\frac{a}{\sin A} = 6$, then the length of the diameter of its circumcircle is .... length units

(a) 6 (b) 12 (c) 3 (d) 9

(11) If $\sqrt[3]{x^2} = 9$, then $x \in$ ....

(a) $\{27\}$ (b) $\{27 , -27\}$ (c) $\{1\}$ (d) $\varnothing$

(12) If $\log_3 x = 2$, then $x =$ ....

(a) 3 (b) 5 (c) 8 (d) 9

(13) $\lim_{x \to -1} 3x^2 =$ ....

(a) 2 (b) 3 (c) 4 (d) 5

(14) In Δ ABC , $\cos(A + B) =$ ....

(a) $\frac{a^2 + b^2 - c^2}{2\,ab}$ (b) $\frac{a^2 + c^2 - b^2}{2\,ab}$ (c) $\frac{b^2 + c^2 - a^2}{2\,bc}$ (d) $\frac{c^2 - a^2 - b^2}{2\,ab}$

(15) If $2^{x+1} = 8$, then $x =$ ....

(a) 1 (b) 2 (c) 3 (d) 4

(16) The solution set of the inequality : $|2x + 3| \leq 1$ in $\mathbb{R}$ is ....

(a) $\mathbb{R}$ (b) $]-2 , -1[$ (c) $[-2 , -1]$ (d) $\varnothing$

(17) The vertex of the curve of the function f where $f(x) = (1 + x)^2 - 3$ is ....

(a) $(1 , 3)$ (b) $(1 , -3)$ (c) $(-1 , 3)$ (d) $(-1 , -3)$

(18) $\lim_{x \to 4} \frac{(x-3)^2 - 1}{x - 4} =$ ....

(a) zero (b) 2 (c) 3 (d) 4

(19) $\lim_{x \to \infty} \frac{2x}{\sqrt{9x^2 + 1}} =$ ....

(a) $\frac{2}{9}$ (b) zero (c) $\frac{2}{3}$ (d) ∞

(20) If the perimeter of triangle ABC equals 15 cm. , m $(\angle A) = 82°$, m $(\angle B) = 47°$, then the length of AB $\simeq$ .... cm.

(a) 6 (b) 7 (c) 5 (d) 8

(21) In Δ ABC , m $(\angle A) = 45°$, the length of the radius of its circumcircle = 6 cm. , then a = ... cm.

(a) 13 (b) $6\sqrt{2}$ (c) 12 (d) $\sqrt{2}$

(22) If $y = f(x)$ is a real function , then its image by translation 3 units vertically upwards is $g(x) =$ ....

(a) $f(x - 3)$ (b) $f(x + 3)$ (c) $f(x) + 3$ (d) $f(x) - 3$

(23) $\lim\limits_{x \to -2} \frac{3x^2 - 12}{x + 2} =$ ....

(a) 18 (b) -3 (c) 12 (d) -12

(24) DEF is a triangle in which m (∠ D) = 80° and m (∠ E) = 60° , if f = 12 cm. , then d = ... cm.

(a) $\frac{12 \sin 80°}{\sin 40°}$ (b) $\frac{12 \sin 80°}{\sin 60°}$ (c) $\frac{12 \sin 40°}{\sin 80°}$ (d) $\frac{12 \cos 80°}{\cos 40°}$

(25) In Δ ABC : If $\frac{\sin A}{4} = \frac{\sin B}{9} = \frac{\sin C}{7}$, then the greatest angle in measure is ....

(a) ∠ A (b) ∠ B (c) ∠ C (d) right.

(26) In Δ XYZ , $x = 5$ cm. , y = 3 cm. , m (∠ Z) = 120° , then z = ... cm.

(a) 7 (b) 6 (c) $3\sqrt{3}$ (d) 4

(27) The solution set of the equation : $| x - 2 | = 3$ is ....

(a) $\{2 , 3\}$ (b) $\{-1 , 5\}$ (c) $[-1 , 5]$ (d) $\{5 , -5\}$

(28) If $3^x = 5$, then $x =$ ....

(a) 3 (b) $\log_3 5$ (c) $\log_5 3$ (d) $\frac{5}{3}$

Second Essay questions

Answer the following questions :

1 **Find the solution set in $\mathbb{R}$:** $| x - 3 | = | x + 1 |$

2 If $f(x) = 5^x$, **find the value of :** $\frac{f(x+4) - f(x+3)}{f(x+5) - f(x+4)}$

3 **Find :** $\lim\limits_{x \to \infty} \left(\frac{x}{2x + 1} + \frac{3x^2}{(x - 2)^2} \right)$

4 **Find :** $\lim\limits_{x \to -1} \frac{x + 1}{\sqrt{x + 5} - 2}$

4 **Giza Governorate**  **Awseem Educational Directorate Mathematics Inspection**

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The type of the functions $f : f(x) = x^2$ where $f : \mathbb{Z}^+ \longrightarrow \mathbb{Z}$ is ....

(a) even. (b) odd.

(c) neither even nor odd. (d) constant.

(2) If $f : f(x) = 2$, then the range of the function f is ....

(a) $\mathbb{R}$ (b) $\mathbb{R}^+$ (c) $\{2\}$ (d) $\mathbb{R} - \{2\}$

(3) The range of the function $f : f(x) = \frac{1}{x} + 1$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{2\}$ (c) $\mathbb{R}^+$ (d) $\mathbb{R} - \{1\}$

(4) The S.S. of the equation : $|x - 2| + 1 = 0$ is ....

(a) $\mathbb{R}$ (b) $\varnothing$ (c) $\{3\}$ (d) $\{-1\}$

(5) The axis of symmetry of the function $f : f(x) = 2 - (x - 1)^2$ is $x =$ ....

(a) 1 (b) -1 (c) 2 (d) 3

(6) If $5^{x+2} = 125$, then $x =$ ....

(a) 2 (b) 1 (c) 3 (d) 4

(7) If $9 \times 3^{2-x} = 81^{-1}$, then $x =$ ....

(a) 6 (b) 7 (c) 8 (d) 9

(8) $\left((2)^7 \div (2)^5\right)^{\frac{1}{2}} =$ ....

(a) 2 (b) -2 (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

(9) The two curves of the two functions $f : f(x) = 2^x$, $g : g(x) = 3^x$ will intersect at $x =$ ....

(a) 2 (b) 3 (c) zero (d) 5

(10) If $\log_x (5x) = 2$, then $x \in \{$..............$\}$

(a) $\{0 , 5\}$ (b) $\{5\}$ (c) $\{0\}$ (d) $\{2\}$

(11) $\log_8 \log_2 \log_3 (x - 4) = \frac{1}{3}$, then $x =$ ....

(a) 8 (b) 48 (c) 90 (d) 85

(12) $\log 125 - \log 6 + \log 48 =$ ....

(a) 3 (b) 6 (c) 7 (d) 8

(13) If $\log_2 x + \log_4 x = 3$, then $x =$ ....

(a) 2 (b) 3 (c) 4 (d) 5

(14) If $2^x = 7$, then $x \simeq$ ....

(a) 2.25 (b) 2.81 (c) 2.85 (d) 3

(15) $\lim_{x \to 3} \frac{x^3 - 27}{x^2 - 2x - 3} =$ ....

(a) 6.5 (b) 6.75 (c) 7 (d) 7.5

(16) $\lim_{x \to 2} (10) =$ ....

(a) 2 (b) 5 (c) 10 (d) 8

(17) $\lim_{x \to 2} \frac{x^4 - k^4}{x - k} = 32$, then k = ...

(a) zero (b) 1 (c) 2 (d) 3

(18) $\lim_{x \to \infty} (3x^{-5} + 4x^{-2} + 5) =$ ....

(a) 5 (b) ∞ (c) 12 (d) zero

(19) $\lim_{x \to \infty} x^{-4} =$ ....

(a) zero (b) -4 (c) 4 (d) ∞

(20) In Δ XYZ , the expression $\frac{x^2 + y^2 - z^2}{2xy} =$ ....

(a) cos X (b) cos Y (c) cos Z (d) sin Y

(21) $\lim_{h \to 0} \frac{(2 + 3h)^5 - 32}{2h} =$ ....

(a) 32 (b) 64 (c) 80 (d) 120

(22) In triangle ABC if $a^2 = b^2 + c^2 + bc$, then $m(\angle A) =$ ....°

(a) 120 (b) 60 (c) 45 (d) 30

(23) In triangle ABC if $m(\angle C) = 30°$, AB = 14 cm. , then the circumference of the circle = ... cm.

(a) 28π (b) 30π (c) 28 (d) 335π

(24) The radius length of the circumcircle of triangle ABC in which $m(\angle A) = 30°$, a = 10 cm. is ....

(a) 5 (b) 10 (c) 20 (d) 40

(25) If r is the radius of the circumcircle of triangle XYZ , then $\frac{2y}{\sin X} =$ ....

(a) r (b) 2 r (c) 4 r (d) 3 r

(26) ABC is a triangle in which $\cos B = \frac{c}{2a}$, then the triangle will be ....

(a) scalene. (b) right-angled. (c) isosceles. (d) equilateral.

(27) In triangle XYZ : $y^2 + z^2 - x^2 = 2yz$ ....

(a) cos X (b) sin Z (c) cos Z (d) sin X

(28) In triangle XYZ if : 2 sin X = 3 sin Y = 4 sin Z , then $x : y : z =$ ....

(a) 2 : 3 : 4 (b) 6 : 4 : 3 (c) 3 : 4 : 6 (d) 4 : 3 : 2

Second Essay questions

Answer the following questions :

1 Draw the graph of the function $f : f(x) = x^3 + 1$ and deduce from the graph its range and its monotony.

2 **Find in $\mathbb{R}$ the S.S. of the equation :** $5^{x+1} + 5^{x-1} = 26$

3 **Find :** (1) $\lim_{x \to 1} \frac{x^3 - 2x + 1}{x^2 - 1}$ (2) $\lim_{x \to 0} \frac{(x+1)^{11} - 1}{x}$

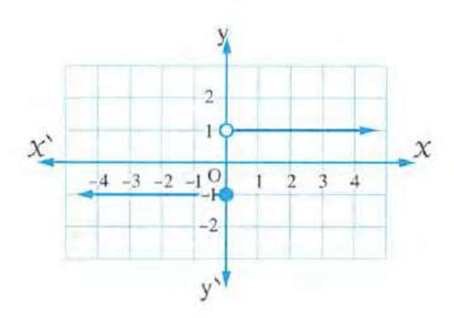
4 **Find the value of :** (1) $\lim_{x \to 3} \frac{x^2 - 8x + 15}{x - 3}$ (2) $\lim_{x \to \infty} (x^5 + x^2 - 1)$

5 Giza Governorate  Mathematics inspection

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The opposite figure represents a function it's range is ....



(a) $\{1\}$ (b) $\{1, -1\}$

(c) $\{-1\}$ (d) $\mathbb{R}$

(2) $\lim_{x \to \infty} \frac{2x + 3}{5x^2 + 4} =$ ....

(a) 2 (b) zero (c) $\frac{3}{4}$ (d) $\frac{4}{10}$

(3) ABC is an equilateral triangle , its side length is $5\sqrt{3}$ cm. , then the length of the diameter of circumcircle = ... cm.

(a) 5 (b) 10 (c) 15 (d) 20

(4) The exponential function $f : f(x) = a^x$ is increasing when ....

(a) $a > 0$ (b) $a > 1$ (c) $a = 1$ (d) $1 > a > 0$

(5) $\lim_{x \to 1} \frac{x^7 - 1}{x - 1} =$ ....

(a) 35 (b) 7 (c) 42 (d) 1

(6) In Δ ABC , m ($\angle$ A) : m ($\angle$ B) : m ($\angle$ C) = 3 : 5 : 4 , then $c^2 : a^2 =$ ....

(a) $\sqrt{6} : 2$ (b) 2 : 3 (c) 4 : 3 (d) 3 : 2

(7) f is a function , where $f(x) = (x - 2)^2$, then the equation of its symmetric axis is $x =$ ....

(a) 2 (b) − 2 (c) 1 (d) − 1

(8) $\lim\limits_{x \to 1} \frac{2x+k}{x+1} = 5$, then k = ...

(a) 2 (b) 5 (c) 8 (d) 10

(9) In Δ ABC , $\frac{a}{\sin A} = 6$, then the radius length of circumcircle = ... cm.

(a) 2 (b) 3 (c) 5 (d) 6

(10) $\text{Log}_3 5 \times \log_2 3 \times \log_5 16$ = ...

(a) 30 (b) 15 (c) log 10000 (d) $\log_{30} 240$

(11) The curve of the function g : $g(x) = x^2 + 4$ is the same curve of the function $f : f(x) = x^2$ by translation of magnitude 4 units in direction of ....

(a) $\overrightarrow{OX}$ (b) $\overrightarrow{OX'}$ (c) $\overrightarrow{Oy}$ (d) $\overrightarrow{Oy'}$

(12) $\lim\limits_{x \to 1} \frac{x^2 - x^{-2}}{x - x^{-1}}$ = ...

(a) zero (b) 1 (c) 2 (d) – 2

(13) In Δ ABC , m ($\angle$ A) = 30° , b = $15\sqrt{3}$ cm. , m ($\angle$ B) = 60° , then a = ... cm.

(a) 30 (b) 45 (c) 15 (d) 60

(14) S.S. of the equation $\log_x (x+6) = 2$ in $\mathbb{R}$ is ....

(a) (3 , – 2) (b) {3} (c) {3 , 1} (d) {6 , 1}

(15) $\lim\limits_{x \to 1} (2x - 5)$ = ...

(a) 2 (b) – 3 (c) 7 (d) zero

(16) In Δ ABC , $a^2 + b^2 - c^2$ = ...

(a) cos A (b) a b cos C (c) cos C (d) 2 a b cos C

(17) The solution set of inequality : $| x - 2 | < 5$ is ....

(a) [– 3 , 7] (b)]– 3 , 7[(c) $\mathbb{R}$ – [– 3 , 7] (d) $\mathbb{R}$ –]– 3 , 7[

(18) $\lim\limits_{x \to 1} \frac{2x-4}{x-2}$ = ...

(a) 1 (b) 2 (c) – 2 (d) zero

(19) In Δ ABC , if sin A = 2 sin C , BC = 6 cm. , then AB = ... cm.

(a) 2 (b) 3 (c) 4 (d) 6

(20) In Δ ABC , $\frac{a}{a+b} = \frac{\sin A}{\text{..............}}$

(a) sin B (b) sin A + sin B (c) sin A + sin C (d) sin C

(21) In Δ ABC , a = 3 cm. , b = 5 cm. , c = 7 cm. , the measure of the greatest angle of Δ ABC is ....°

(a) 60 (b) 150 (c) 120 (d) 90

(22) If $X^{\frac{3}{2}} = 64$, then $X =$ ....

(a) 512 (b) 16 (c) 4 (d) 2

(23) $f(X) =$ .... is an even function.

(a) $\sin X$ (b) $\tan 45°$ (c) $X \cos X$ (d) $X^2 + \tan X$

(24) The function $f : f(X) = \frac{5}{X} + 2$, its range is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{2\}$ (c) $\{2\}$ (d) $\mathbb{R} - \{0\}$

(25) The symmetric point of the function f where $f(X) = \frac{2X - 1}{X}$ is ....

(a) (1 , 2) (b) (2 , 1) (c) (– 1 , 2) (d) (0 , 2)

(26) The point of the vertex of the curve of the function $f : f(X) = (X - 2)^2 + 3$ is ....

(a) (2 , 3) (b) (2 , – 3) (c) (– 2 , 3) (d) (– 2 , – 3)

(27) If $\log_4 X = 2$, then the equivalent exponential form is ....

(a) $X^2 = 4$ (b) $X^4 = 2$ (c) $X = 8$ (d) $X = 4^2$

(28) If $3^{X-2} = 2^{X-2}$, then $X =$ ....

(a) 3 (b) – 2 (c) 0 (d) 2

Second Essay questions

Answer the following questions :

1 **Without using calculator find the value of :**

$$\log_2 \frac{3}{25} + 5 \log_2 5 + \log_2 27 - \log_2 \frac{125}{12} - \log_2 243$$

---

2 **Find :** (1) $\lim_{X \to 3} \frac{X^3 - 27}{X^2 - 9}$ (2) $\lim_{X \to \infty} \frac{4X^2 + 1}{X^2 - 2}$

---

3 **Find :** (1) $\lim_{X \to 1} \frac{X^2 + 5X - 6}{X^2 - 1}$ (2) $\lim_{X \to 1} \frac{(X + 1)^5 - 32}{X - 1}$

---

4 Graph the curve of the function f where $f(X) = |X - 3|$, deduce the range and monotony of the function and tell whether it is even , odd or otherwise.

6 Giza Governorate  El-Omrania Educational directorate

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The solution of the inequality $|2X+3| \leq 7$ is ....

(a) $[-5, 2]$ (b) $]-5, 2[$ (c) $\mathbb{R} - [-5, 2]$ (d) $\mathbb{R} -]-5, 2[$

(2) In any Δ ABC : $\frac{\sin (A+B)}{\sin A} =$ ....

(a) $\frac{a}{a+b}$ (b) $\frac{a+b}{a}$ (c) $\frac{c}{a}$ (d) $-\frac{c}{a}$

(3) Which of the following functions is even function ?

(a) $y = X \cos X$ (b) $y = X^2 \sin X$ (c) $y = X \sin X$ (d) $y = X^3$

(4) The solution set of the equation $3 \log_5 (X-2) = 6$ is ....

(a) $\{27\}$ (b) $\{-27\}$ (c) $\{25\}$ (d) $\{7\}$

(5) ABC is equilateral triangle inscribed in a circle of radius length 10 cm.
, then AB = ... cm.

(a) 5 (b) $10\sqrt{3}$ (c) 10 (d) $5\sqrt{3}$

(6) $\lim\limits_{X \to \infty} \frac{(2X+1)(3-X)}{(X^2+2)} =$ ....

(a) 6 (b) 2 (c) -2 (d) ∞

(7) The range of the function $f : f(X) = |X-2| + 3$ is ....

(a) $[2, \infty[$ (b) $[3, \infty[$ (c) $]3, \infty[$ (d) $]-\infty, 2]$

(8) The solution set of the equation : $\sqrt{X^2 - 10X + 25} = 10$ is ....

(a) $\{-15, 5\}$ (b) $\{-15, -5\}$ (c) $\{15, -5\}$ (d) $\{15, 5\}$

(9) $\lim\limits_{X \to 5} \frac{X^2 - 25}{X - 5} =$ ....

(a) 5 (b) -5 (c) -10 (d) 10

(10) In Δ ABC , if $a^2 + b^2 - c^2 = ab$, then $m(\angle C) =$ ....

(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{6}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{2}$

(11) $\lim\limits_{X \to 1} \frac{aX+3}{X^2+1} = 5$, then a = ...

(a) 3 (b) 5 (c) -7 (d) 7

(12) The solution set of the equation : $5^X + 5^{X+1} = 150$ is ....

(a) $\{-2\}$ (b) $\{2\}$ (c) $\{-3\}$ (d) $\{2, 3\}$

(13) $\lim\limits_{x \to 2} \dfrac{x^n - 2^5}{x^2 - 2^m} = k$, then m + n + k = ...

(a) 47 (b) 20 (c) 7 (d) 27

(14) If log 3 = x , then log 90 = ...

(a) $9x$ (b) $2x + 1$ (c) $x + 1$ (d) $2x + 10$

(15) The domain of the function $f : f(x) = \sqrt{x - 3}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{3\}$ (c) $[3, \infty[$ (d) $]-\infty, 3[$

(16) In Δ ABC , $\dfrac{a}{\sin A} + \dfrac{c}{\sin C} = 20$ cm. , then the diameter length of the circumcircle of triangle ABC = ... cm.

(a) 5 (b) 10 (c) 20 (d) 40

(17) The axis of symmetry of the function $f : f(x) = 5 - (3 - x)^2$ is ....

(a) $x = 3$ (b) $y = 5$ (c) $x + 3 = 0$ (d) $x = 5$

(18) If the domain of the function $f : f(x) = \dfrac{1}{x - 2} + 3$ is $\mathbb{R} - \{a\}$, then a^2 = ...

(a) 9 (b) – 9 (c) – 4 (d) 4

(19) In Δ LMN , 3 sin L = 4 sin M = 5 sin N , then ℓ : m : n = ...

(a) 4 : 5 : 3 (b) 15 : 12 : 20 (c) 20 : 15 : 12 (d) 3 : 4 : 5

(20) If $5^x = 7$, then 5^{x+1} = ...

(a) 5^7 (b) 7^5 (c) 12 (d) 35

(21) The number of solutions of the Δ ABC in which m (∠ A) = 112° , a = 7 cm. , b = 4 cm. , equals ....

(a) 0 (b) 1 (c) 2 (d) 3

(22) $\lim\limits_{x \to 0} \dfrac{\sqrt{x + 9} - 3}{5x}$ = ...

(a) – 30 (b) 30 (c) $\frac{1}{30}$ (d) $-\frac{1}{30}$

(23) The domain of the function $f : f(x) = \log x^2$ is ....

(a) $\mathbb{R}^*$ (b) $\mathbb{R}$ (c) $\mathbb{R}^-$ (d) $\mathbb{R}^+$

(24) Measure of the greatest angle in triangle whose side lengths are 5 , 7 , 4 cm. is ....

(a) 135° 23̀ (b) 44° 25̀ (c) 120° (d) 101° 32̀

(25) $\lim\limits_{x \to 0} \dfrac{X}{\cos X}$ = ...

(a) zero (b) 1 (c) not exist (d) ∞

(26) Δ ABC in which m (∠ A) = 80° , m (∠ C) = 60° , b = 14 cm. , then a = ...

(a) 17.8 cm. (b) 18.9 cm. (c) 15.6 cm. (d) 21.4 cm.

(27) Which of the following is not a function from X to y ?

(a) $|y| = 2X^2$ (b) $y^3 = 2X$ (c) $y = |X + 1|$ (d) $y = X^2 + 1$

(28) $\frac{1}{\log_a abc} + \frac{1}{\log_c abc} + \frac{1}{\log_b abc} = \dots\dots$

(a) $(abc)^2$ (b) abc (c) 2 abc (d) 1

Second Essay questions

Answer the following questions :

1 Draw the curve of the function $f : f(X) = (X - 2)^3$ from the graph deduce its range , and discuss its monotony.

2 If the volume of a sphere gives by the relation $v = \frac{4}{3}\pi r^3$,

if the volume equals 345.45 cm^3. Find its radius length.

3 **Find with steps :** $\lim\limits_{X \to 4} \frac{X^3 - 3X^2 - 4X}{X - 4}$

4 **Find with steps :** $\lim\limits_{X \to 0} \frac{X^2 + X}{\sqrt{2X + 9} - 3}$



7 Alexandria Governorate

West Education Zone
Nabaa Elfekr secondary school

First Multiple choice questions

Choose the correct answer from the given ones :

(1) The domain of the function $f : f(X) = \sqrt[3]{X - 5}$ is ....

(a) $[5 , \infty[$ (b) $]5 , \infty[$ (c) $]-\infty , 5[$ (d) $\mathbb{R}$

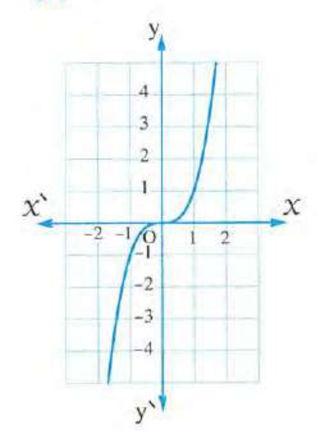
(2) The opposite figure represents .... function.

(a) even

(b) neither even nor odd

(c) odd

(d) symmetric about y-axis



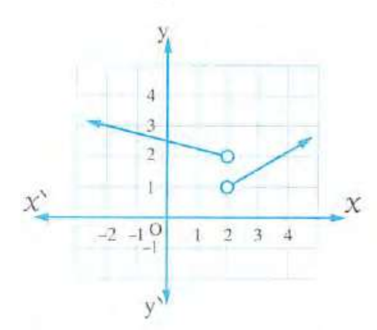
(3) The range of $f : f(X) = \frac{1}{X - 2} - 1$ is ....

(a) $\mathbb{R} - \{2\}$ (b) $\mathbb{R} - \{1\}$ (c) $\mathbb{R} - \{-1\}$ (d) $\mathbb{R}$

(4) The curve of the function $g : g(X) = (X - 2)^2$ is the same of the curve of the function $f : f(X) = X^2$ by translate 2 units in direction of ....

(a) $\overrightarrow{oX}$ (b) $\overrightarrow{oX`}$ (c) $\overrightarrow{oy}$ (d) $\overrightarrow{oy`}$

(5) In the opposite figure :



$\lim_{X \to 2} f(X) =$ ....

(a) 1

(b) zero

(c) 2

(d) not exist.

(6) In Δ ABC : m ($\angle$ A) = 112° , m ($\angle$ B) = 33° , c = 19 cm. , then b $\simeq$ .... cm.

(a) 16 (b) 17 (c) 18 (d) 20

(7) The radius of circumcircle of Δ XYZ when m ($\angle$ X) = 30° , X = 7 cm. equals ....

(a) 10 (b) 14 (c) 7 (d) 21

(8) The S.S. of the inequality $|X| - 1 > 0$ in $\mathbb{R}$ is ....

(a) $\mathbb{R} - [-1 , 1]$ (b) $]-1 , 1[$ (c) $\mathbb{R} -]-1 , 1[$ (d) $[-1 , 1]$

(9) The S.S. of the equation : $5^{X+1} = 7^{X+1}$ in $\mathbb{R}$ is ....

(a) $\{1\}$ (b) $\{-1\}$ (c) $\{\text{zero}\}$ (d) $\{5\}$

(10) The equation of symmetry axis of the function f where $f(X) = (X - 2)^2 + 3$ is ....

(a) $X = 2$ (b) $X = 3$ (c) $y = 2$ (d) $y = 3$

(11) The S.S. of the equation : $\log_X (X + 2) = 2$ is ....

(a) $\{-1\}$ (b) $\{2\}$ (c) $\{-1 , 2\}$ (d) $\{4\}$

(12) $\lim_{X \to 0} (2X^2 + 3) =$ ....

(a) 2 (b) 3 (c) 5 (d) 7

(13) In Δ ABC : $\frac{\sin A}{2} = \frac{\sin B}{3} = \frac{\sin C}{5}$, then a : b : c = ...

(a) 4 : 3 : 10 (b) 2 : 3 : 5 (c) 4 : 6 : 5 (d) 4 : 3 : 5

(14) In Δ ABC : $a^2 + b^2 - c^2 =$ ....

(a) cos A (b) ab cos C (c) cos C (d) 2 ab cos C

(15) If f odd function , a $\in$ domain of f , then f (a) + f (– a) = ...

(a) 2 f (a) (b) 2 f (– a) (c) zero (d) f (a)

(16) The point of symmetry of the curve of the function $f : f(X) = (X - 2)^3 + 1$ is ....

(a) (2 , 1) (b) (– 2 , – 1) (c) (– 2 , 1) (d) (2 , – 1)

(17) If $2^X = 3$, then X = ...

(a) 2 (b) $\frac{3}{2}$ (c) $\log_3 2$ (d) $\log_2 3$

(18) $\lim\limits_{x \to 2} \frac{X^2 - 5X + 4}{X^2 - 1}$ = ...

(a) $-\frac{2}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

(19) $\lim\limits_{x \to \infty} \frac{\sqrt{4X^2 + 1}}{X - 2}$ = ...

(a) 4 (b) 5 (c) $-\frac{5}{2}$ (d) 2

(20) The measure of smallest angle in Δ ABC where a = 8 cm. , b = 7 cm. and its perimeter 21 cm. $\simeq$ ....

(a) $22° 34'$ (b) $42° 34'$ (c) $36° 34'$ (d) $46° 34'$

(21) In Δ ABC : cos A = $\frac{2}{5}$, b = 2.5 cm. , c = 2 cm. , then a = ...

(a) 2 (b) 2.5 (c) 3 (d) 3.5

(22) The S.S. of the equation $|X - 7| = 5$ is ....

(a) {7 , 12} (b) {– 2 , 2} (c) {7 , 5} (d) {12 , 2}

(23) The exponential function which its base (a) is increasing if ....

(a) a > 0 (b) a > 1 (c) 0 < a < 1 (d) a = 1

(24) If $f(X) = 5^X$, then the S.S. of the equation : $f(X + 1) + f(X) = 150$ is ....

(a) {5} (b) {2 , 5} (c) {3} (d) {2}

(25) In Δ XYZ : X = 5 cm. , Y = 7 cm. , m ($\angle$ Z) = 65° , then Z = ...

(a) 7.6 (b) 6.7 (c) 7.8 (d) 8.7

(26) In Δ ABC , if m ($\angle$ A) = 30° , a = 6 cm. , then $\frac{b}{\sin B}$ = ...

(a) 3 (b) 6 (c) $\frac{1}{2}$ (d) 12

(27) $\lim\limits_{x \to 0} \frac{5X - 10}{4X - 8}$ = ...

(a) $\frac{5}{4}$ (b) zero (c) 2 (d) $\frac{4}{5}$

(28) If $\lim\limits_{x \to 1} \frac{b}{X + 1} = 5$, then b = ...

(a) 4 (b) – 1 (c) 1 (d) 10

Second | Essay questions

Answer the following questions :

1 Draw the curve of the function $f : f(\mathcal{X}) = (\mathcal{X} - 2)^2 + 1$, then find its range and monotony and its type.

2 **Find in $\mathbb{R}$ the solution set of the inequality :** $| 3\mathcal{X} - 2 | \leq 7$

3 **Find :** $\lim\limits_{\mathcal{X} \to 5} \dfrac{\mathcal{X} - 5}{\sqrt{\mathcal{X} + 4} - 3}$

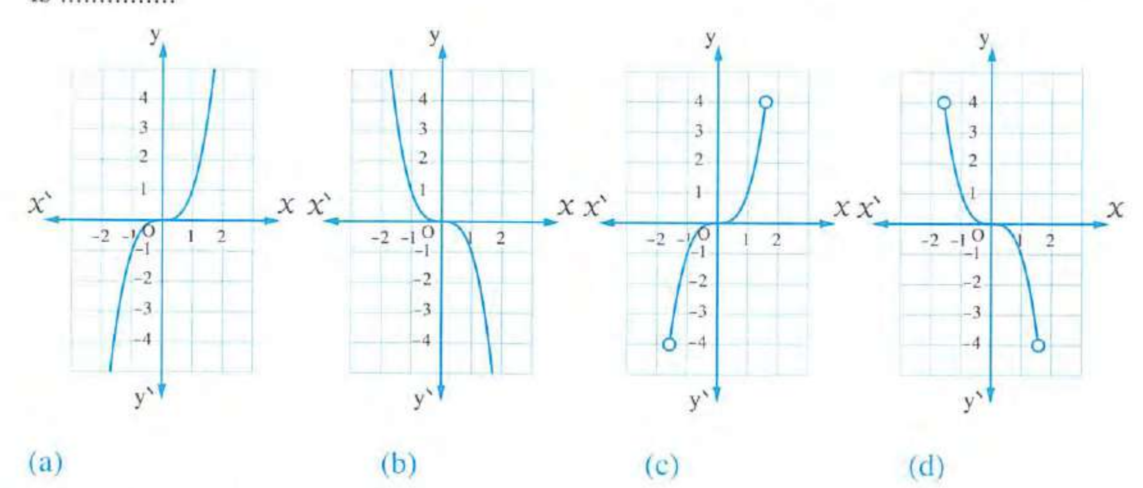
4 **Find :** $\lim\limits_{\mathcal{X} \to \infty} \dfrac{4\mathcal{X}^2 + 1}{\mathcal{X}^2 - 2}$



First | Multiple choice questions

Choose the correct answer from the given ones :

(1) If $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(\mathcal{X}) = \mathcal{X}^3$, then the figure which represents the function f is ....



(2) If $5^{\mathcal{X} - 3} = 4^{3 - \mathcal{X}}$, then $\mathcal{X} =$ ....

(a) $\frac{5}{4}$ (b) 3 (c) $\frac{4}{5}$ (d) 0

(3) The range of the function f where $f(\mathcal{X}) = |\mathcal{X}|$ is ....

(a) $[0 , \infty[$ (b) $]0 , \infty[$ (c) $]-\infty , 0]$ (d) $]-\infty , 0[$

(4) If $f(\mathcal{X}) = 5^{\mathcal{X}}$, then $f(-2) =$ ....

(a) -2 (b) 5 (c) $\frac{1}{25}$ (d) $\frac{1}{5}$

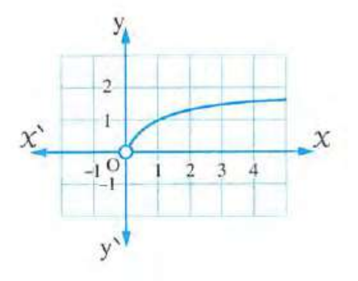
(5) The solution set of the inequality : $|x| - 1 >$ zero in $\mathbb{R}$ is ....

(a) $\mathbb{R} - [-1 , 1]$ (b) $]-1 , 1[$ (c) $\mathbb{R} -]-1 , 1[$ (d) $[-1 , 1]$

(6) If $4 = \log_2 x$, then the equivalent exponential form is ....

(a) $x^2 = 4$ (b) $x^4 = 2$ (c) $x = 2^4$ (d) $x = 8$

(7) The domain of the function in the figure opposite is ....





(a) $[0 , \infty[$

(b) $]0 , \infty[$

(c) $[0 , 1]$

(d) $]0 , 2[$

(8) Which of the following functions represents an increasing exponential function on its domain $\mathbb{R}$?

(a) $y = 3\,(1.05)^x$ (b) $y = 3\left(\frac{1}{1.05}\right)^x$ (c) $y = 3 + (0.5)^x$ (d) $y = (0.05)^x$

(9) In Δ ABC , if $a = b = 8$ cm. and the perimeter of Δ ABC = 26 cm. , then $m(\angle C) \approx$ ....

(a) 35.3° (b) 52.3° (c) 77.4° (d) 108°

(10) In Δ ABC , if $m(\angle A) = 30°$ and $a = 6$ cm. , then $\frac{b}{\sin B} =$ .... cm.

(a) 3 (b) 6 (c) $\frac{1}{5}$ (d) 12

(11) $\lim\limits_{x \to 1} \frac{x^5 - 1}{x - 1} =$ ....

(a) 5 (b) 1 (c) 4 (d) 20

(12) In any triangle LMN , $\frac{\ell}{\sin L} =$ ....

(a) $\frac{m}{\sin N}$ (b) $\frac{n}{\sin M}$ (c) $\frac{m + n}{\sin N + \sin M}$ (d) 3 r

(13) $\lim\limits_{x \to \infty} \frac{\sqrt{4x^2 + 1}}{x - 2} =$ ....

(a) 4 (b) 5 (c) $\frac{5}{-2}$ (d) 2

(14) $\lim\limits_{x \to 0} (2x^2 + 3) =$ ....

(a) 2 (b) 3 (c) 5 (d) 7

(15) In Δ ABC , if $2 \sin A = 3 \sin B = 4 \sin C$, then a : b : c = ...

(a) 2 : 3 : 4 (b) 4 : 3 : 2 (c) 3 : 4 : 6 (d) 6 : 4 : 3

(16) In Δ ABC , if $4 \sin A = 3 \sin B = 6 \sin C$, then $m(\angle C) \simeq$ ....

(a) 89° (b) 29° (c) 57° (d) 82°

(17) The solution set in $\mathbb{R}$ of the equation : $2^{2X} - 12 \times 2^{X} + 2^{5} = 0$ equals ....

(a) $\{4 , 8\}$ (b) $\{2 , 3\}$ (c) $\{16 , 2\}$ (d) $\{1 , 4\}$

(18) The function $f : f(X) = a^{X}$ is increasing if ....

(a) $a > 0$ (b) $a > 1$ (c) $a = 1$ (d) $0 < a < 1$

(19) ABC is an equilateral triangle its side length $= 5\sqrt{3}$ cm. , then the diameter length of its circumcircle equals .... cm.

(a) $5\sqrt{3}$ (b) $10\sqrt{3}$ (c) 10 (d) 5

(20) $\log_5 49 \times \log_8 5 \times \log_9 8 \times \log_7 9 =$ ....

(a) log 100 (b) log 7 (c) log 5 (d) log 2

(21) If $f : \mathbb{R} \longrightarrow \mathbb{R}$, where $f(X) = (a + 1) X + b - 2$ and $f(X)$ maps each real number to itself , then (a , b) = ...

(a) (0 , 3) (b) (0 , − 3) (c) (0 , 2) (d) (− 1 , 2)

(22) The type of the function $f : f(X) = \frac{\sin X}{X}$ is ....

(a) even. (b) odd.

(c) neither odd nor even. (d) both odd and even.

(23) $\lim\limits_{X \to \frac{\pi}{4}} \frac{\tan X}{X} =$ ....

(a) $\frac{\pi}{4}$ (b) 1 (c) $\frac{4}{\pi}$ (d) does not exist.

(24) $\lim\limits_{X \to 1} \frac{2X + a}{X + 1} = 5$, then a = ...

(a) 2 (b) 5 (c) 8 (d) 10

(25) In any triangle XYZ , $X^2 + y^2 - 2Xy \operatorname{coz} Z =$ ....

(a) X^2 (b) y^2 (c) z^2 (d) z

(26) If $f(X) = \frac{\sqrt{X^2 - 2X + 1}}{X - 1}$, then the range of the function f is ....

(a) $\{1\}$ (b) $\mathbb{R}$ (c) $[-1 , 1[$ (d) $\{-1 , 1\}$

(27) $\lim\limits_{X \to 1} \frac{X^2 - 1}{X - 1} =$ ....

(a) 0 (b) 1 (c) 2 (d) 3

(28) In Δ ABC , m ($\angle$ A) : m ($\angle$ B) : m ($\angle$ C) = 3 : 5 : 4 , then $c^2 : a^2 =$ ....

(a) $\sqrt{6} : 2$ (b) 2 : 3 (c) 4 : 3 (d) 3 : 2

Second | Essay questions

Answer the following questions :

1 Graph the curve of the function f where $f(X) = |X - 3|$, deduce the range and monotony of the function and tell whether it is even , odd or otherwise.

2 Find the solution set of the following equation in $\mathbb{R}$: $\log_2 X + \log_2 (X + 1) = 1$

3 **Find the value of the following :** $\lim_{X \to \infty} \frac{4 - 3X^2}{\sqrt{X^4 + 5}}$

4 **Find the value of the following :** $\lim_{X \to -1} \frac{2X^3 - X^2 - 2X + 1}{X^3 + 1}$

9 **El-Menia Governorate**



Minia Educational Directorate
Minia Governmental Language School

First | Multiple choice questions

Choose the correct answer from the given ones :

(1) The range of the function $f : f(X) = |X|$ is ....

(a) $[0, \infty[$ (b) $]0, \infty[$ (c) $]-\infty, 0]$ (d) $]-\infty, 0[$

(2) The curve of the even function is symmetric about the straight line ....

(a) $y = X$ (b) $\overleftrightarrow{yy'}$ (c) $\overleftrightarrow{XX'}$ (d) $y = -X$

(3) The S.S. of the inequality $|3 - 2X| \leq 1$ in $\mathbb{R}$ is ....

(a) $[1, 2]$ (b) $]1, 2[$ (c) $\mathbb{R} -]1, 2[$ (d) $\mathbb{R} - [1, 2]$

(4) The range of the function $f : f(X) = \frac{15}{X} + 2$ is ....

(a) π (b) $\mathbb{R} - \{2\}$ (c) $\{2\}$ (d) $\mathbb{R} - \{0\}$

(5) The S.S. of the equation $|2X - 1| = 5$ in $\mathbb{R}$ is ....

(a) $\{3\}$ (b) $\{-2\}$ (c) $\varnothing$ (d) $\{3, -2\}$

(6) The point of symmetry of the curve of the function $f : f(X) = X^3$ is ....

(a) $(1, 1)$ (b) $(0, 0)$ (c) $(1, 0)$ (d) $(0, 1)$

(7) The domain of the function $f : f(X) = \frac{2X}{X^2 - 4}$ is ....

(a) $\mathbb{R} - \{-2, 2\}$ (b) $\mathbb{R} - \{-2, 0, 2\}$ (c) $\mathbb{R}$ (d) $\mathbb{R} - \{4\}$

(8) The function $f : f(X) = a^X$ is decreasing if ....

(a) $a = 1$ (b) $a > 1$ (c) $0 < a < 1$ (d) $a = -1$

(9) If $3^{x+1} - 3^{x} = 54$, then $x =$ ....

(a) 1 (b) 2 (c) 3 (d) 4

(10) If $f(x) = 3^{x+2}$, then $f(x+1) \times f(-x) =$ ....

(a) 27 (b) 81 (c) 243 (d) 729

(11) If $\log 3 = x$, $\log 5 = y$, then $\log 15 =$ ....

(a) $x + y$ (b) $x - y$ (c) $x y$ (d) $\frac{x}{y}$

(12) If $3^{x-2} = 2^{x-2}$, then $x =$ ....

(a) 3 (b) -2 (c) 0 (d) 2

(13) The solution set of the equation : $x^{\frac{4}{3}} = 81$ in $\mathbb{R}$ is ....

(a) $\{-27 , 27\}$ (b) $\{9 , -9\}$ (c) $\{9\}$ (d) $\{27\}$

(14) If $2^{x-3} = 1$, then $x =$ ....

(a) -3 (b) 3 (c) 1 (d) zero

(15) $\lim\limits_{x \to 1} \frac{2x - 4}{x - 2} =$ ....

(a) 1 (b) 2 (c) -2 (d) zero

(16) $\lim\limits_{x \to 4} \frac{x^2 + 7x + b}{x^2 - 6x + 8} = \frac{15}{2}$, then $b =$ ....

(a) -44 (b) 7 (c) -8 (d) 8

(17) $\lim\limits_{y \to 2} \frac{y^5 - 32}{y - 2} =$ ....

(a) $31 y^4$ (b) 32×2^4 (c) 64 (d) 5×2^4

(18) $\lim\limits_{y \to 0} \frac{x^2 + x}{x} =$ ....

(a) zero (b) 1 (c) 2 (d) 3

(19) $\lim\limits_{x \to \infty} \left(\frac{3x^2 + 2x + 1}{x^2 - 3x + 2}\right)^4 =$ ....

(a) 3 (b) 9 (c) 27 (d) 81

(20) $\lim\limits_{x \to \infty} \frac{kx}{3x + 1} = 4$, then $k =$ ....

(a) 16 (b) 12 (c) 7 (d) $\frac{4}{3}$

(21) In Δ XYZ , $\frac{x}{\sin X} = 6$, then the length of diameter of its circumcircle = ... length unit.

(a) 4 (b) 12 (c) 6 (d) 9

(22) In Δ ABC : if $2 \sin A = 3 \sin B = 4 \sin c$, then $a : b : c =$ ....

(a) 2 : 3 : 4 (b) 4 : 3 : 2 (c) 3 : 4 : 6 (d) 6 : 4 : 3

(23) The measure of the greatest angle of the triangle whose side lengths are 3 cm. , 5 cm. and 7 cm. is ....

(a) 150° (b) 120° (c) 60° (d) 30°

(24) Triangle XYZ in which : Y = 6 cm. , Z = 10 cm. , m (∠ X) = 120° , then the perimeter of the triangle = ... cm.

(a) 24.72 (b) 26.3 (c) 28.88 (d) 30

(25) In Δ ABC , if 4 sin A = 3 sin B = 6 sin C , then m (∠ C) = ... (to nearest degree)

(a) 89° (b) 29° (c) 57° (d) 82°

(26) If ABC is a triangle in which a = 4 cm. , b = $4\sqrt{3}$ cm. , c = 8 cm. , then sine of its smallest angle = ...

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) 1 (d) zero

(27) Δ ABC in which a = 8 cm. , b = 7 cm. , cos C = $\frac{1}{2}$, then the area of Δ ABC = ... cm^2.

(a) 14 (b) $14\sqrt{3}$ (c) 8 (d) $28\sqrt{3}$

(28) In any Δ XYZ : $x^2 + y^2 - 2xy \cos z$ = ...

(a) x^2 (b) y^2 (c) z^2 (d) z

Second Essay questions

Answer the following questions :

1 **Find in ℝ the solution set of :** $|x - 3| \le 4$

2 **Find the domain of** $f : f(x) = \log_4 (4 - x)$

3 **Find :** $\lim_{x \to 2} \frac{x^3 - 8}{x^2 - 5x + 6}$

4 **Find :** $\lim_{x \to \infty} \frac{2x - 9}{|3x| + 7}$

10 Aswan Governorate



Aswan Educational Administration
M.M. Yaqoub Language School

First Multiple choice questions

Choose the correct answer from the given ones :

(1) Vertex of function $f : f(x) = (x - 4)^2 + 2$ is ....

(a) (– 4 , 2) (b) (2 , 4) (c) (4 , – 2) (d) (4 , 2)

(2) $\lim_{x \to -2} (3x^2 + x - 4)$ is ....

(a) 3 (b) 12 (c) 9 (d) 6

(3) If $3^{x-3} = 4^{x-3}$, then x = ...

(a) {9} (b) {– 3} (c) {zero} (d) {3}

(4) Domain of $f : f(x) = \dfrac{x+2}{x^2-4}$ is ....

(a) $\mathbb{R} - \{2\}$ (b) $\mathbb{R} - \{-2\}$ (c) $\mathbb{R} - \{2, -2\}$ (d) $\varnothing$

(5) In Δ ABC which is drawn in a circle , then $\dfrac{1}{2r} =$ ....

(a) $\dfrac{a}{\sin A}$ (b) $\dfrac{b}{\sin B}$ (c) $\dfrac{c}{\sin C}$ (d) $\dfrac{\sin A}{a}$

(6) $\lim\limits_{x \to 0} \dfrac{x^2 - x}{x}$ is ....

(a) zero (b) ∞ (c) $-\infty$ (d) -1

(7) In Δ ABC , if $a = 5$, $b = 7$, $c = 8$, then m ($\angle$ B) $\simeq$ ....

(a) 90° (b) 80° (c) 70° (d) 60°

(8) Diameter length of circumcircle of triangle ABC in which m ($\angle$ A) = 60° , $a = \sqrt{3}$ cm. is .... cm.

(a) $\sqrt{\dfrac{3}{2}}$ (b) $2\sqrt{3}$ (c) 2 (d) $\sqrt{3}$

(9) $\lim\limits_{x \to 2} \sqrt{3x+3} =$ ....

(a) 1 (b) -3 (c) 3 (d) ± 3

(10) Solution set of : $|x| + 3 = 0$, is ....

(a) ± 3 (b) 3 (c) -3 (d) $\varnothing$

(11) Type of function $f : f(x) = 2 - x^2$ is ....

(a) even. (b) odd.

(c) neither even nor odd. (d) increasing.

(12) Monotony of function $f : f(x) = \left(\frac{1}{5}\right)^x$, is ....

(a) increasing. (b) decreasing.

(c) increasing and decreasing. (d) constant.

(13) $\lim\limits_{x \to a} \dfrac{x^n - a^n}{x - a}$ is ....

(a) an^{a-1} (b) na^{1-n} (c) na^{1-a} (d) na^{n-1}

(14) **In the opposite figure :**

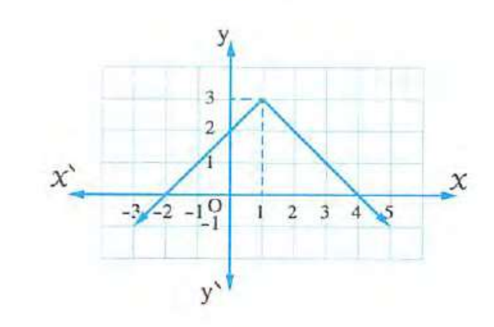
Rule of the function is ....

(a) $f(x) = |x - 1| + 3$

(b) $f(x) = 3 - |x + 1|$

(c) $f(x) = 3 - |x - 1|$

(d) $f(x) = |1 - x| + 3$



(15) In Δ ABC if m ($\angle$ A) = 30° and a = 6 cm. , then $\frac{b}{\sin B}$ = ...

(a) 11 (b) 21 (c) 13 (d) 12

(16) $\lim\limits_{x \to 1} \frac{x^2 + x - 2}{x - 1}$ = ...

(a) 1 (b) 2 (c) 3 (d) 4

(17) In Δ ABC : $b^2 + c^2 - a^2$ = ...

(a) 2 bc cos A (b) 2 ac cos B (c) 2 bc cos C (d) 2 ab cos C

(18) The range of the function $f : f(x) = -(x)^2$ is ....

(a) $]-\infty , 0[$ (b) $]0 , \infty[$ (c) $[0 , \infty[$ (d) $]-\infty , 0]$

(19) If : $\log_2(x) + \log_2(x+1) = 1$, where $x \in \mathbb{R}$, then x = ...

(a) $\{-1 , 2\}$ (b) $\{1\}$ (c) $\{2\}$ (d) $\{-2 , 1\}$

(20) $\lim\limits_{x \to 0} \frac{(x+1)^{17} - 1}{x}$ = ...

(a) 15 (b) 16 (c) 18 (d) 17

(21) Symetric point of the curve $f : f(x) = 3 - \frac{1}{2 - x}$

(a) (3 , −2) (b) (−2 , 3) (c) (−2 , −3) (d) (2 , 3)

(22) $\log_5 \sqrt{5}$ = ...

(a) 2 (b) 5 (c) $\frac{1}{2}$ (d) −1

(23) In Δ ABC if a : b : c = 3 : 2 : 2 , then cos A = ...

(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) $\frac{3}{4}$ (d) $-\frac{1}{8}$

(24) $\lim\limits_{x \to 2} \frac{x^5 - 32}{x - 2}$ = ...

(a) 64 (b) 46 (c) 80 (d) 82

(25) If $f : f(x) = \frac{1}{3}$, then $f\left(\frac{1}{3}\right)$ = ...

(a) 1 (b) $\frac{1}{9}$ (c) 3 (d) $\frac{1}{3}$

(26) $\lim\limits_{x \to \infty} \frac{\sqrt{4x^2 - 1}}{x - 2}$ = ...

(a) 4 (b) 5 (c) 1 (d) 2

(27) Range of the function $f : f(x) = x$ is ....

(a) $\mathbb{R} - \{1\}$ (b) $\mathbb{R} - \{0\}$ (c) $\mathbb{R}$ (d) $\mathbb{R} - \{0 , 1\}$

(28) The two curves of the two functions $f : f(x) = 2^x$ and $g : g(x) = \left(\frac{1}{2}\right)^x$ intersect at x = ... , y = ...

(a) (−2 , 0) (b) (0 , −2) (c) (0 , 1) (d) (1 , 0)

Second Essay questions

Answer the following questions :

1 **Find :** $\lim\limits_{x \to \infty} \left(5 - \frac{5}{x^3}\right)$

---

2 Use the curve of $f : f(x) = x^3$ to graph $g : g(x) = x^3 - 3$ From the graph deduce domain and its range.

---

3 Use the curve of the function f where $f(x) = \frac{1}{x-1}$ to represent g where $g(x) = f(x) + 2$

Find :

(a) Monotony of the function g

(b) Range of g

---

4 Find the perimeter of Δ ABC in which a = 8 cm. , b = 6 cm. and m ($\angle$ C) = 48°

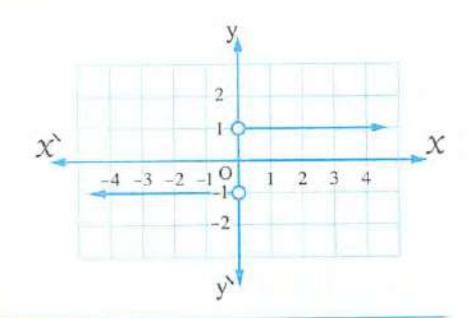
SECOND Examination models

Model 1

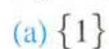
Interactive test 1 

First Multiple choice questions

Choose the correct answer from the given ones :



1 The range of the given function in the opposite figure is ....

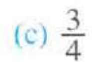
(a) $\{1\}$  (b) $\{1 , -1\}$

(c) $\{-1\}$ (d) $\mathbb{R}$

2 If $5^{x-3} = 4^{3-x}$, then $x =$ ....

(a) $\frac{5}{4}$ (b) 3 (c) $\frac{4}{5}$ (d) zero

3 $\lim\limits_{x \to \infty} \frac{2x+3}{5x^2+4} =$ ....

(a) 2  (b) zero (c) $\frac{3}{4}$  (d) $\frac{2}{5}$

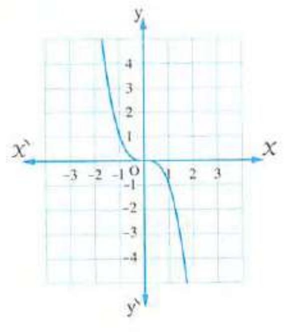
4 In Δ ABC , if 4 sin A = 3 sin B = 6 sin C , then m ($\angle$ C) $\simeq$ ....

(a) 89° (b) 29° (c) 57° (d) 82°

5 In Δ ABC , m ($\angle$ C) = 96° 23` , a = 7 cm. , b = 9 cm. , then c $\simeq$ .... cm.

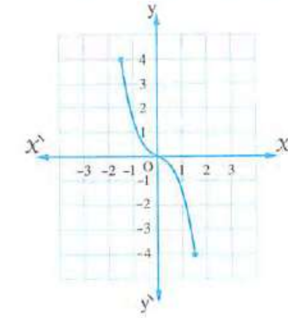
(a) 7 (b) 9 (c) 13 (d) 12

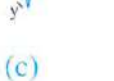
6 If $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x) = x^3$, then the figure which represents the function f is ....

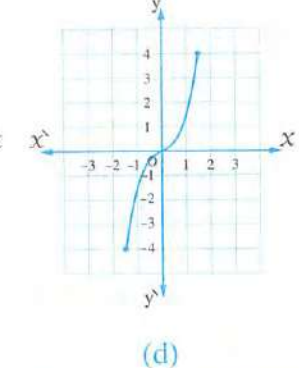


(a)

(b)



(c) 



(d)

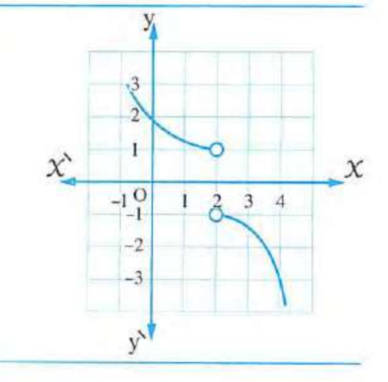
7 The solution set in $\mathbb{R}$ of the equation : $2^{2x} - 12 \times 2^{x} + 2^5 = 0$ equals ....

(a) $\{4 , 8\}$ (b) $\{2 , 3\}$ (c) $\{16 , 2\}$ (d) $\{1 , 4\}$

8 $\lim\limits_{x \to 0} \frac{(x+2)^5 - 32}{x} = \dots\dots$

(a) 25 (b) 64 (c) 80 (d) 100

9 The opposite figure represents the curve of the function f , then $\lim\limits_{x \to 2} f(x) = \dots\dots$



(a) 1 (b) -1

(c) 2 (d) does not exist.

10 The function $f : f(x) = a^x$ is increasing if $\dots\dots$

(a) $a > 0$ (b) $a > 1$ (c) $a = 1$ (d) $0 < a < 1$

11 If $x = 5 + 2\sqrt{6}$, then $\log\left(x + \frac{1}{x}\right) = \dots\dots$

(a) 1 (b) $5 - 2\sqrt{6}$ (c) 10 (d) $5 + 2\sqrt{6}$

12 ABC is an equilateral triangle , its side length $= 5\sqrt{3}$ cm. , then the diameter length of its circumcircle equals $\dots\dots$ cm.

(a) $5\sqrt{3}$ (b) $10\sqrt{3}$ (c) 10 (d) 5

13 $\log_5 49 \times \log_8 5 \times \log_9 8 \times \log_7 9 = \dots\dots$

(a) log 100 (b) log 7 (c) log 5 (d) log 2

14 $\lim\limits_{x \to 1} \frac{x^7 - 1}{x - 1} = \dots\dots$

(a) 35 (b) 7 (c) 42 (d) 1

15 The solution set of the equation : $\log_3 x \times \log_2 3 = 5$ in $\mathbb{R}$ is $\dots\dots$

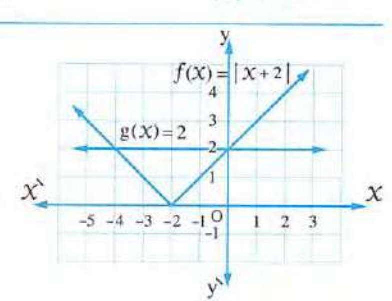
(a) $\{32\}$ (b) $\{5\}$ (c) $\{3\}$ (d) $\{2\}$

16 In Δ ABC , m ($\angle$ A) : m ($\angle$ B) : m ($\angle$ C) = 3 : 5 : 4 , then $c^2 : a^2 = \dots\dots$

(a) $\sqrt{6} : 2$ (b) 2 : 3 (c) 4 : 3 (d) 3 : 2

17 **In the opposite figure :**

The solution set of the inequality : $f(x) < g(x)$ in $\mathbb{R}$ is $\dots\dots$



(a) $\{-4 , 0\}$ (b) $[-4 , 0]$

(c) $\mathbb{R} - [-4 , 0]$ (d) $]-4 , 0[$

18 The type of the function $f : f(x) = \frac{\sin x}{x}$ is ....

(a) even. (b) odd.

(c) neither odd nor even. (d) both odd and even.

19 $\lim_{x \to \frac{\pi}{4}} \frac{\tan x}{x} =$ ....

(a) $\frac{\pi}{4}$ (b) 1 (c) $\frac{4}{\pi}$ (d) does not exist.

20 If $x^{\frac{3}{2}} = 8$, then $x =$ ....

(a) 2 (b) 4 (c) 8 (d) 9

21 $\lim_{x \to 2} \frac{x^3 - 7x + 6}{3x^2 - 8x + 4} =$ ....

(a) $\frac{4}{5}$ (b) $\frac{2}{3}$ (c) $\frac{5}{4}$ (d) $\frac{3}{2}$

22 If $\lim_{x \to 1} \frac{2x + a}{x + 1} = 5$, then $a =$ ....

(a) 2 (b) 5 (c) 8 (d) 10

23 In any triangle XYZ , $x^2 + y^2 - 2xy\cos Z =$ ....

(a) x^2 (b) y^2 (c) z^2 (d) z

24 The number of possible solutions for the triangle ABC where : $m(\angle A) = 60°$, b = 3 cm. , a = 5 cm. is ....

(a) 1 (b) 2

(c) zero (d) infinite number.

25 If $\left(\frac{1}{2}\right)^{a^2 - a - 2} = 1$ where $a > 0$, then $a =$ ....

(a) 1 (b) -3 (c) 2 (d) 3

26 If $f(x) = \frac{\sqrt{x^2 - 2x + 1}}{x - 1}$, then the range of the function f is ....

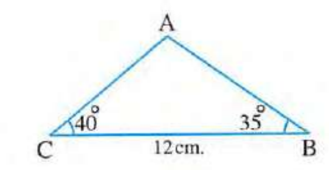
(a) $\{1\}$ (b) $\mathbb{R}$ (c) $[-1 , 1[$ (d) $\{-1 , 1\}$

27 **In the opposite figure :**

The length of $\overline{AB} \approx$ .... cm.

(a) 6 (b) 7

(c) 8 (d) 9



28 In Δ XYZ , the expression $\frac{X^2 + y^2 - z^2}{2 X y}$ equals ....

(a) cos X (b) cos Y (c) cos Z (d) sin Z

Second Essay questions

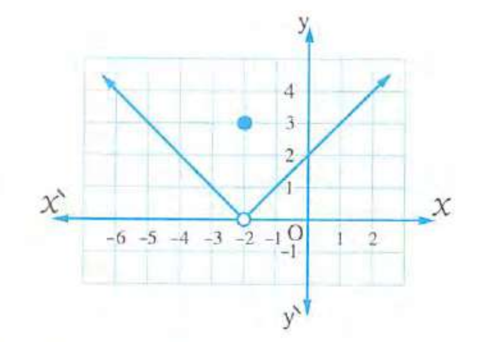
Answer the following questions :

1 Use the curve of the function f where $f(X) = \frac{1}{X}$ to represent the function g : g $(X) = f(X - 2) + 2$ and from the graph determine the range and discuss its monotony.

2 **Find :** $\lim\limits_{X \to \infty} \frac{\sqrt{4 X^2 + 1}}{5 X + 2}$

3 **Find the solution set in $\mathbb{R}$ of the inequality :** $\sqrt{4 X^2 - 12 X + 9} \leq 9$

4 **From the opposite figure , find :**



(1) $\lim\limits_{X \to -2} f(X)$

(2) $f(-2)$

(3) $\lim\limits_{X \to 0} f(X)$

(4) $f(0)$

Model 2

Interactive test 2



First Multiple choice questions

Choose the correct from the given ones :

1 The range of the function $f : f(X) = |X|$ is ....

(a) $[0 , \infty[$ (b) $]0 , \infty[$ (c) $]-\infty , 0]$ (d) $]-\infty , 0[$

2 $\lim\limits_{X \to \infty} \left(\frac{3}{5}\right)^{\frac{1}{X}} =$ ....

(a) 1 (b) -1 (c) $\frac{3}{5}$ (d) ∞

3 $\lim\limits_{X \to 1} \frac{X^5 - 1}{X - 1} =$ ....

(a) 5 (b) 1 (c) 4 (d) 20

4 In Δ ABC , $\frac{a}{\sin A} = 6$ cm. , then the radius length of its circumcircle = ... cm.

(a) 2 (b) 3 (c) 5 (d) 6

5 If f is an odd function and $x\, f(x) + x^3 f(-x) = 2$, then $f(2) =$ ....

(a) 3 (b) $\frac{1}{3}$ (c) $-\frac{1}{3}$ (d) -3

6 In Δ XYZ , $\frac{x^2 + y^2 - z^2}{2\,x\,y} =$ ....

(a) cos X (b) cos Y (c) cos Z (d) sin Z

7 If $f(x) = 3^x$, then the solution set in $\mathbb{R}$ of the equation $f(2x) - 28\, f(x) + f(3) =$ zero equals ....

(a) $\{1, 27\}$ (b) $\{1, 3\}$ (c) $\{0, 3\}$ (d) $\{3\}$

8 The logarithmic form that equivalent to the exponential form : $2^7 = 128$ is ....

(a) $\log_2 128 = 7$ (b) $\log_2 7 = 128$

(c) $\log_7 128 = 2$ (d) $\log_7 2 = 128$

9 The curve of the even function is symmetric about the straight line ....

(a) $y = x$ (b) $\overleftrightarrow{yy}$ (c) $\overleftrightarrow{xx}$ (d) $y = -x$

10 In Δ LMN , $\frac{\sin L}{3} = \frac{2 \sin M}{3} = \frac{\sin N}{4}$, then $\ell : m : n =$ ....

(a) 6 : 8 : 3 (b) 3 : 6 : 8 (c) 8 : 3 : 6 (d) 6 : 3 : 8

11 In Δ ABC , c = 7 cm. , $m(\angle A) = 70°$, $m(\angle B) = 40°$, then $b \simeq$ .... cm.

(a) 3.7 (b) 4.8 (c) 8.4 (d) 7.3

12 If $\lim_{x \to a} \frac{a\,x}{3} = 12$, then a = ...

(a) ± 12 (b) ± 6 (c) 3 (d) -3

13 The range of the function $f : f(x) = \frac{x-2}{2-x}$ equals ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{2\}$ (c) $\mathbb{R} - \{-2\}$ (d) $\{-1\}$

14 If $\log 3 = x$, $\log 7 = y$, then $\log 21 =$ ....

(a) $x\,y$ (b) $x + y$ (c) $x - y$ (d) $\frac{x}{y}$

15 $\log_3 5 \times \log_2 3 \times \log_5 16 =$ ....

(a) 30 (b) 15 (c) log 10000 (d) $\log_{30} 240$

16 The curve of the function g : g $(X) = X^2 + 4$ is the same as the curve of f : $f(X) = X^2$ by translation 4 units in the direction of ....

(a) $\overrightarrow{OX}$ (b) $\overrightarrow{OX'}$ (c) $\overrightarrow{Oy}$ (d) $\overrightarrow{Oy'}$

17 $\lim\limits_{X \to 5} \dfrac{\sqrt{X-1}-2}{X-5} =$ ....

(a) $\frac{4}{3}$ (b) $\frac{3}{4}$ (c) 4 (d) $\frac{1}{4}$

18 The function f where $f(X) = a^X$ is decreasing on its domain if ....

(a) a = 1 (b) a > 1 (c) 0 < a < 1 (d) a = − 1

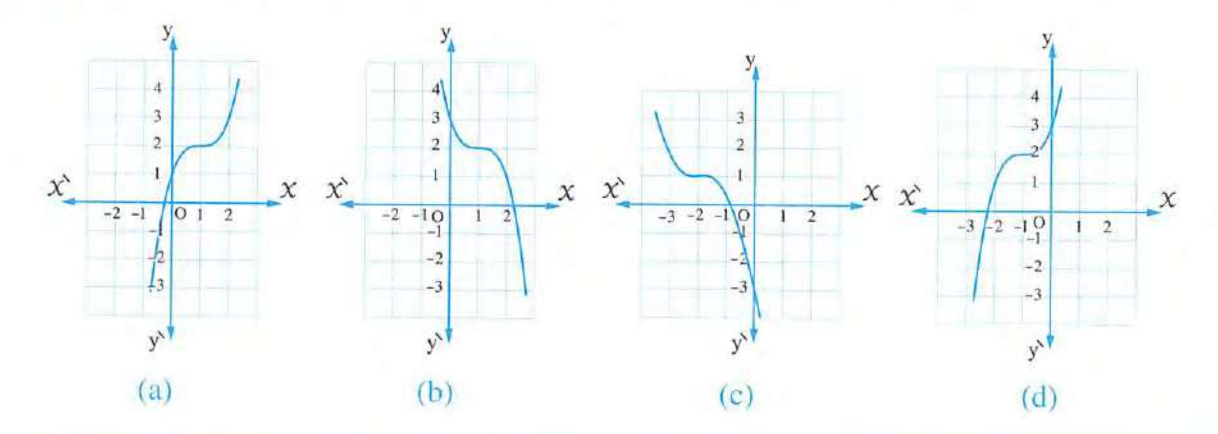
19 $\lim\limits_{X \to 0} \dfrac{(4X+1)^9 - 1}{3X} =$ ....

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) 9 (d) 12

20 The solution set in $\mathbb{R}$ of the equation : $|X - 7| = 2$ is ....

(a) $\{9, 5\}$ (b) $\{7, 3\}$ (c) $\varnothing$ (d) $\{3, -3\}$

21 If $f(X) = 2 - (X-1)^3$, then the figure that represents the function f is ....



(a) (b) (c) (d)

22 If the perimeter of Δ ABC = 33 cm. , $\sin A + \sin C = \frac{2}{3}$, $\sin B = \frac{1}{4}$

, then AC = ... cm.

(a) 6 (b) 9 (c) 12 (d) 15

23 If $3^{(2x+7)} = 11^{x}$, then the value of x to the nearest 1 decimal place equals ....

(a) 28.3 (b) 38.3 (c) 3.8 (d) 28.4

24 $\lim\limits_{x \to \infty} (5 + 3x^2 + x) =$ ....

(a) not exist. (b) 5 (c) ∞ (d) 9

25 ABCD is a parallelogram , m (∠ A) = 50° , m (∠ DBC) = 70° , BD = 8 cm.

, then the perimeter of the parallelogram ABCD to the nearest cm. = ... cm.

(a) 38 (b) 30 (c) 19 (d) 48

26 The solution set of the inequality $| x - 1 | \le 3$ is ....

(a) $[-2 , 4]$ (b) $]-2 , 4[$ (c) $]-2 , 4]$ (d) $\mathbb{R} - [-2 , 4]$

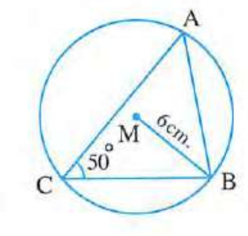
27 In Δ ABC , cos (A + B) = ...

(a) cos C (b) – cos C (c) sin C (d) – sin C

28 **In the opposite figure :**

M is the centre of the circle

, BM = 6 cm. , then AB = ... cm.



(a) 6 sin 50° (b) 12 sin 50°

(c) 6 cos 50° (d) 12 cos 50°

Second Essay questions

Answer the following questions :

1 If $x = 5 + 2\sqrt{6}$, find in the simplest form the value of $\log \left(\frac{1}{x} + x\right)$ without using calculator.

2 Use the curve of the function $f : f(x) = \frac{1}{x}$ to graph the curve of the function $g : g(x) = \frac{1}{x-2} + 3$, from the graph state the domain and range of g and the monotony and its type whether it is even , odd or otherwise.

3 **Find :** $\lim\limits_{x \to 1} \frac{(x+2)^4 - 81}{x - 1}$

4 $\lim\limits_{x \to \infty} \frac{6x - 4x^3}{2 - 7x^3}$

Model 3

Interactive test 3



First Multiple choice questions

Choose the correct answer from the given ones :

1 If $f(X) = 7^{X+1}$, then the solution set of the equation : $f(2X-1) + f(X-2) = 50$ in $\mathbb{R}$ equals ....

(a) $\{1\}$ (b) $\{1, -1\}$ (c) $\{1, -50\}$ (d) $\{7, -50\}$

2 If $\log 3 = X$, $\log 5 = y$, then $\log 15 =$ ....

(a) Xy (b) $\frac{X}{y}$ (c) $X + y$ (d) $X - y$

3 $\lim\limits_{X \to \infty} \frac{5 + X^{-2}}{1 + 3X^{-2}} =$ ....

(a) $\frac{1}{3}$ (b) $\frac{5}{4}$ (c) $\frac{5}{3}$ (d) 5

4 If $f(X) = 5^X$, then $f(-2) =$ ....

(a) -2 (b) 5 (c) $\frac{1}{25}$ (d) $\frac{1}{5}$

5 The domain of the function $f : f(X) = \log_3 (X - 2)$ is $X >$ ....

(a) 3 (b) 5 (c) 1 (d) 2

6 $\log 25 + \frac{\log 8 \times \log 16}{\log 64} =$ ....

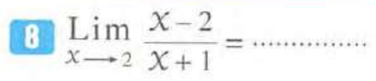
(a) $\log_2 16$ (b) $\log_5 25$ (c) $\log 4$ (d) $\log 10$

7 **In the opposite figure :**

If the perimeter of Δ ABC = 42 cm. ,

the circle touches the sides of the triangle internally , then : m ($\angle$ B) = ...

(a) $53^\circ\ 8'$ (b) $67^\circ\ 23'$ (c) $36^\circ\ 53'$ (d) $32^\circ\ 37'$

8 

$\lim\limits_{X \to 2} \frac{X - 2}{X + 1} =$ ....

(a) zero (b) 1 (c) 2 (d) ∞

9 $\lim\limits_{x \to \infty} \frac{\sqrt{x^2}}{x} = \dots\dots$

(a) zero (b) 2 (c) ∞ (d) 1

10 $\lim\limits_{x \to 5} \frac{x^2 - 8x + 15}{x^2 - 10x + 25} = \dots\dots$

(a) does not exist. (b) zero (c) 2 (d) 3

11 The included area between the curves of the two functions $f : f(x) = |x + 3| - 2$, $g : g(x) =$ zero is …… square units.

(a) 2 (b) 3 (c) 4 (d) 5

12 If $\log_3 y = x$, then the exponential form is ……

(a) $y = x^3$ (b) $x = y^3$ (c) $x = 3^y$ (d) $y = 3^x$

13 If f is an odd function on $[-x , x]$, then $f(-x) + f(x) = \dots\dots$

(a) $2x$ (b) undefined. (c) $-2x$ (d) zero

14 In $\triangle ABC$, if $2 \sin A = 3 \sin B = 4 \sin C$, then $a : b : c = \dots\dots$

(a) $2 : 3 : 4$ (b) $4 : 3 : 2$ (c) $3 : 4 : 6$ (d) $6 : 4 : 3$

15 $\lim\limits_{x \to 2} \frac{x^5 - 32}{x^2 + 3x - 10} = \dots\dots$

(a) $\frac{16}{7}$ (b) $\frac{80}{7}$ (c) $\frac{7}{80}$ (d) $\frac{7}{16}$

16 The radius length of the circumcircle of the triangle ABC in which $m(\angle A) = 30^\circ$, $a = 10$ cm. equals ……

(a) 10 cm. (b) 20 cm. (c) 5 cm. (d) 40 cm.

17 The function $f : f(x) = \begin{cases} x^2 & , x > 2 \\ -x^2 & , x \le 2 \end{cases}$ is decreasing on the interval ……

(a) $]0 , 2[$ (b) $]-\infty , 0[$ (c) $\mathbb{R} - [0 , 2[$ (d) $]0 , \infty[$

18 The solution set of the equation : $\log_x 81 = 4$ in $\mathbb{R}$ is ……

(a) $\{-3\}$ (b) $\{3\}$ (c) $\{3 , -3\}$ (d) $\{9\}$

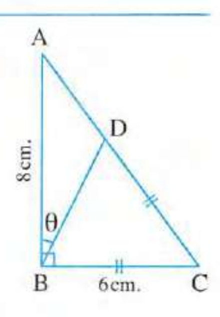
19 The solution set of the equation : $|x + 2| = -2$ in $\mathbb{R}$ is ……

(a) $\varnothing$ (b) $\mathbb{R}$ (c) $]-\infty , -2[$ (d) $]-\infty , -2]$

20 The measure of the greatest angle in the triangle whose side lengths are 3 cm. , 5 cm. , 7 cm. equals ....

(a) 150° (b) 120° (c) 60° (d) 30°

21 **In the opposite figure :**



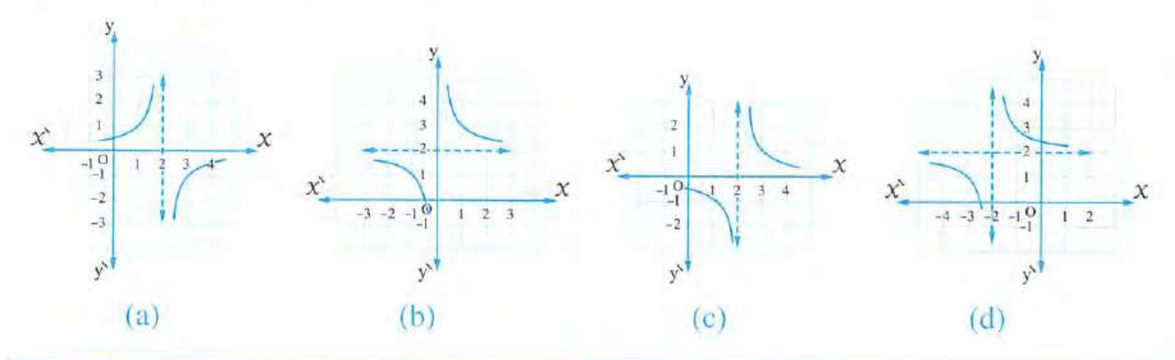
If CD = CB = 6 cm.

, then tan θ = ...

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$

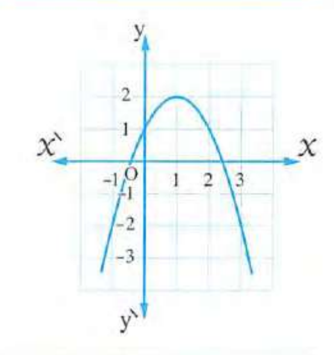
(c) $\frac{1}{2}$ (d) 2

22 If $f(X) = \frac{1}{X - 2}$, then the graph that represents the function f is ....



(a) (b) (c) (d)

23 The rule of the function shown in the opposite figure is $f(X)$ = ...



(a) $(X - 2)^2 + 1$ (b) $-(X - 2)^2 + 1$

(c) $-(X - 1)^2 + 2$ (d) $(-X + 1)^2 + 1$

24 In Δ ABC , $a^2 + b^2 - c^2$ = ...

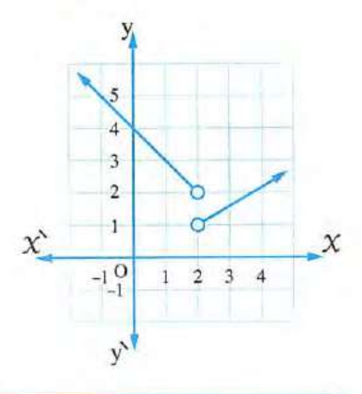
(a) cos A (b) a b cos C (c) cos C (d) 2 a b cos C

25 The solution set of the equation : $X^{\frac{2}{3}} = 25$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{5 , -5\}$

(c) $\{125\}$ (d) $\{125 , -125\}$

26 **In the opposite figure :**



$\lim_{X \to 2} f(X) = \dots\dots$

(a) zero

(b) not exist.

(c) 2

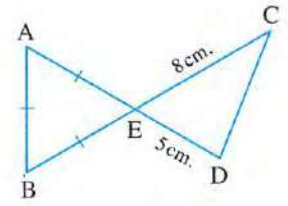
(d) 1

27 The number of possible solutions of Δ ABC in which a = 8 cm. , b = 10 cm.

, m ($\angle$ A) = 42° is $\dots\dots$

(a) 1 (b) 2 (c) infinite number. (d) zero.

28 **In the opposite figure :**



CD = $\dots\dots$ cm.

(a) 6 (b) 7

(c) 8 (d) 9

Second Essay questions

Answer the following questions :

1 **Prove that :** $\frac{2^{X} \times 9^{X+1}}{3 \times (18)^{X}} = 3$

2 Graph the function $f : f(X) = \begin{cases} |X| & , X \leq 0 \\ X^3 & , X > 0 \end{cases}$, from the graph state the range of the function and discuss its monotony.

3 **Find :** $\lim_{X \to \infty} \frac{(X+1)(5X-3)}{X^2+3}$

4 $\lim_{X \to 2} \frac{5X-10}{4X-8}$

Model 4

Interactive test 4



First Multiple choice questions

Choose the correct answer from the given ones :

1 $\lim\limits_{x \to 0} \frac{x^7 - 1}{x + 1} = \dots\dots$

(a) -2 (b) 5 (c) 1 (d) -1

2 In Δ ABC , $\frac{b^2 + c^2 - a^2}{2bc} = \dots\dots$

(a) cos A (b) cos B (c) cos C (d) sin A

3 The solution set in $\mathbb{R}$ of the inequality : $|x - 1| \geq 3$ equals $\dots\dots$

(a) $\mathbb{R} -]-2, 4[$ (b) $[-2, 4]$ (c) $\mathbb{R} - [-2, 4]$ (d) $]-2, 4[$

4 $\lim\limits_{x \to -1} \frac{x^2 + x}{x^3 + 1} = \dots\dots$

(a) zero (b) $-\frac{1}{3}$ (c) -1 (d) does not exist.

5 The radius length of the circumcircle of Δ XYZ in which $x = 20 \sin X$ cm. equals $\dots\dots$ cm.

(a) 5 (b) 10 (c) 20 (d) 40

6 Which of the following functions represents an increasing exponential function on its domain $\mathbb{R}$?

(a) $y = 3(1.05)^x$ (b) $y = 3\left(\frac{1}{1.05}\right)^x$ (c) $y = 3 + (0.5)^x$ (d) $y = (0.05)^x$

7 The solution set of the equation : $\log 5x = -1$ in $\mathbb{R}$ is $\dots\dots$

(a) $\left\{\frac{1}{10}\right\}$ (b) $\left\{\frac{1}{50}\right\}$ (c) $\{1\}$ (d) $\{50\}$

8 The measure of the smallest angle in Δ ABC in which , a = 8 cm. , b = 7 cm. , and its perimeter is 21 cm. approximately equals $\dots\dots$

(a) $32^\circ\ 34'$ (b) $42^\circ\ 34'$ (c) $36^\circ\ 34'$ (d) $46^\circ\ 34'$

9 If $5^{X} = 17$, then the value of X to the nearest two decimals equals ....

(a) 1.34 (b) 1.32 (c) 1.76 (d) 1.67

---

10 $\lim\limits_{h \to 0} \frac{(2-3h)^7 - 128}{4h} =$ ....

(a) 336 (b) – 336 (c) 623 (d) – 633

---

11 If the curve of the function $f : f(X) = \log_4 (1 - a X)$ passes through the point $\left(\frac{1}{8} , \frac{-1}{2}\right)$, then a = ...

(a) 3 (b) 2 (c) 4 (d) 8

---

12 The solution set of the equation : $X^{\frac{4}{3}} = 81$ in $\mathbb{R}$ is ....

(a) $\{27 , -27\}$ (b) $\{9 , -9\}$ (c) $\{9\}$ (d) $\{27\}$

---

13 $\lim\limits_{X \to \infty} \frac{(12)^{\frac{1}{X}}}{X + 7} =$ ....

(a) $\frac{12}{7}$ (b) ∞ (c) 1 (d) zero

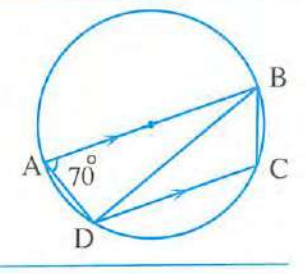
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14 **In the opposite figure :**

If BC = 10 cm. , then the perimeter of Δ BDC $\simeq$ .... cm.

(a) 60 (b) 62

(c) 64 (d) 67



---

15 If $3^{X-2} = 2^{X-2}$, then $X =$ ....

(a) 3 (b) – 2 (c) zero (d) 2

---

16 The domain of the function $f : f(X) = \frac{1}{|X| - 3}$ is ....

(a) $\{3 , -3\}$ (b) $[-3 , 3]$ (c) $\mathbb{R} - [-3 , 3]$ (d) $\mathbb{R} - \{-3 , 3\}$

---

17 The vertex of the curve of the function $f : f(X) = (2 - X)^2 + 3$ is ....

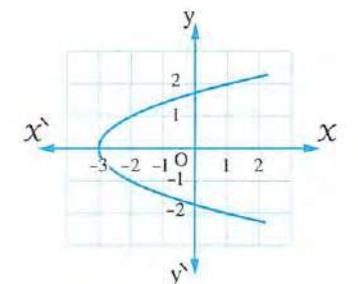
(a) (2 , 3) (b) (2 , – 3) (c) (– 2 , 3) (d) (– 2 , – 3)

---

18 $\lim\limits_{X \to 0} \frac{(2X + 1)^2 - 1}{X} =$ ....

(a) 4 (b) – 3 (c) – 4 (d) – 2

19 The curve represented in the opposite figure is symmetric about the straight line whose equation is ....



(a) $x = 0$ (b) $y = 0$

(c) $y = -2$ (d) $x = 2$

---

20 If $\angle$ A supplements $\angle$ C , then cos A + cos C = ...

(a) 1 (b) zero (c) $\frac{1}{2}$ (d) -1

---

21 $\lim\limits_{x \to 0} \frac{5 + 2x}{\cos 3x} =$ ....

(a) 5 (b) 3 (c) 2 (d) $\frac{5}{3}$

---

22 If $\log_2 x = 4$, then the exponential form that equivalent to it is ....

(a) $2^x = 4$ (b) $x = 2^4$ (c) $x^2 = 4$ (d) $4^x = 2$

---

23 If $\frac{a+b}{13} = \frac{b+c}{11} = \frac{c+a}{12}$, then cos A = ...

(a) $\frac{1}{5}$ (b) $\frac{5}{7}$ (c) $\frac{19}{35}$ (d) $\frac{4}{11}$

---

24 The solution set of the equation : $(\log_2 x)^2 - 2 \log_2 x = 3$ in $\mathbb{R}$ is ....

(a) $\{16\}$ (b) $\{8\}$ (c) $\{8 , 0.5\}$ (d) $\{16 , 0.5\}$

---

25 If g is a real function whose domain is $[-2 , 3]$, then the domain of n : $n(x) = g(x - 2)$ is ....

(a) $[-2 , 3]$ (b) $[-4 , 1]$ (c) $[0 , 5]$ (d) $\mathbb{R}$

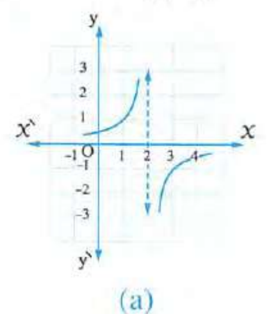
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26 If the radius length of circumcircle of Δ ABC equals 3 cm. and sin A + sin B + sin C = 2 , then the perimeter of triangle ABC = ... cm.

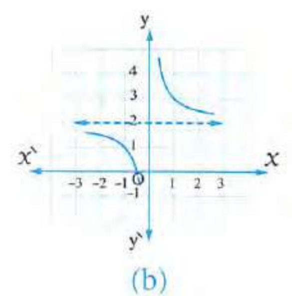
(a) 6 (b) 9 (c) 12 (d) 24

---

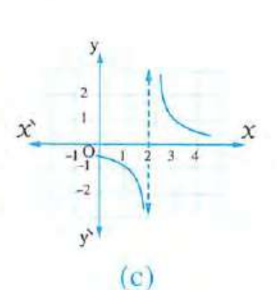
27 If $f(x) = \frac{1}{x - 2}$, then the graph that represents the function f is ....



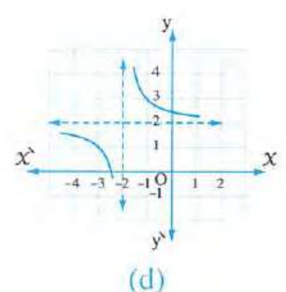
(a)



(b)



(c)



(d)

28 **In the opposite figure :**

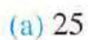
ABCD is a parallelogram

, m ($\angle$ ABD) = 80° , BD = 7 cm.

AB = 5 cm. , then the perimeter

of parallelogram = ... to the nearest cm.

(a) 25 (b) 26 (c) 29 (d) 30



Second Essay questions

Answer the following questions :

1 **Find :** $\lim\limits_{x \to -2} \frac{3x^2 - 12}{x + 2}$

2 Graph the function $f : f(x) = \begin{cases} -x^3 & , x < 0 \\ x & , x \geq 0 \end{cases}$, from the graph find the range and its type whether it is odd , even or otherwise , and discuss its monotony.

3 If $f(x) = 2^x$ **, find the value of** x **which satisfies :** $f(x+1) - f(x-1) = 24$

4 $\lim\limits_{x \to \infty} \frac{4x^5 + 5}{8x^5 + x^4 - 2}$

Model 5

Interactive test 5



First Multiple choice questions

Choose the correct answer from the given ones :

1 $\lim\limits_{x \to 1} \frac{x^{6\frac{1}{2}} - x^{\frac{1}{2}}}{x^{3\frac{1}{2}} - x^{\frac{1}{2}}} =$ ....

(a) $\frac{13}{7}$ (b) 1 (c) 2 (d) x

2 If $5^{x+1} = 7^{x+1}$, then $3^{x+1} =$ ....

(a) zero (b) 3 (c) 2 (d) 1

3 If $x < 1$, then $|3 - x| - |x - 4| =$ ....

(a) -1 (b) 1 (c) $2x - 7$ (d) $7 - 2x$

4 The solution set in $\mathbb{R}$ of the equation : $|2x - 4| = |x + 1|$ equals ....

(a) $\{1\}$ (b) $\{5\}$ (c) $\{1 , 5\}$ (d) $\varnothing$

5 The domain of the function $f : f(X) = \sqrt{X - 2}$ is ....

(a) $\mathbb{R}$ (b) $\{2\}$ (c) $[2 , \infty[$ (d) $]2 , \infty[$

---

6 $\lim\limits_{X \to \infty} \frac{\sqrt{4X^2 + 1}}{X - 2} =$ ....

(a) 4 (b) 5 (c) $-\frac{5}{2}$ (d) 2

---

7 In ΔABC , if $m(\angle A) = 30°$, $b = 15\sqrt{3}$ cm. , $m(\angle B) = 60°$

, then $a =$ .... cm.

(a) 30 (b) 45 (c) 15 (d) 60

---

8 $\lim\limits_{X \to \infty} (3 + 5X^2 + 3X) =$ ....

(a) does not exist. (b) 5 (c) ∞ (d) 11

---

9 The domain of the function $f : f(X) = 5$ is ....

(a) $\left\{\frac{1}{5}\right\}$ (b) $\{5\}$ (c) $\mathbb{R}$ (d) $\mathbb{R} - \{5\}$

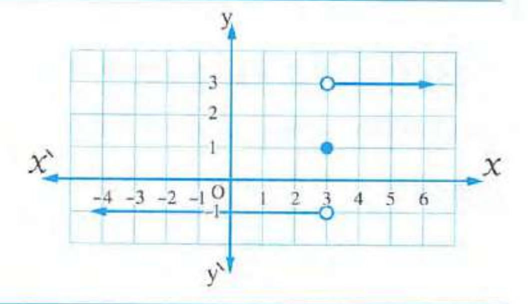
---

10 If $f(a) = 2^a$, then $\log_2 f(a) =$ ....

(a) 2 (b) $f(a)$ (c) a (d) $\frac{1}{2a}$

---

11 **From the opposite figure :**



$\lim\limits_{X \to 3} f(X) =$ ....

(a) 1 (b) 3

(c) -1 (d) does not exist.

---

12 $\lim\limits_{X \to 0} (2X^2 + 3) =$ ....

(a) 2 (b) 3 (c) 5 (d) 7

---

13 From the following functions , the even function is $f : f(X) =$ ....

(a) $\sin X$ (b) $\sin 30°$ (c) $X \cos X$ (d) $X^2 + \tan X$

---

14 In ΔXYZ , $2 X z \times$ .... $= X^2 + z^2 - y^2$

(a) cos X (b) cos Z (c) cos Y (d) sin Y

15 If $\lim\limits_{x \to -1} \frac{x^2 + kx + m}{x^2 - 1} = 3$, then k + m = ...

(a) – 4 (b) – 5 (c) – 8 (d) – 9

---

16 The range of the function $f : f(x) = \frac{x^2 - 1}{x - 1}$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{0\}$ (c) $\mathbb{R} - \{1\}$ (d) $\mathbb{R} - \{2\}$

---

17 If $\frac{a + b}{13} = \frac{b + c}{11} = \frac{c + a}{12}$, then cos A = ...

(a) $\frac{1}{5}$ (b) $\frac{5}{7}$ (c) $\frac{19}{35}$ (d) $\frac{4}{11}$

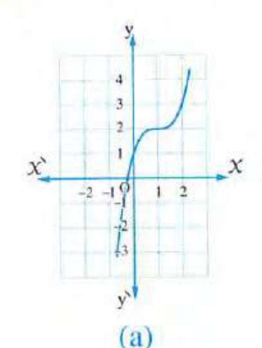
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18 The number of possible solutions of the triangle ABC : m (∠ A) = 47° , a = 4 cm. , b = 6 cm. equals ....

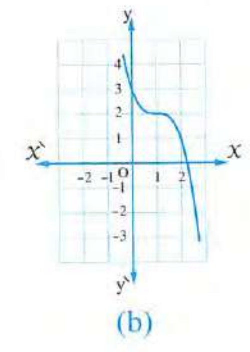
(a) 1 (b) 2 (c) 3 (d) zero

---

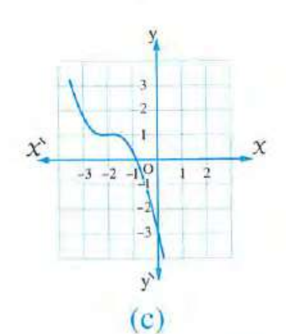
19 If $f(x) = 2 - (x - 1)^3$, then the graph that represents the function f is ....



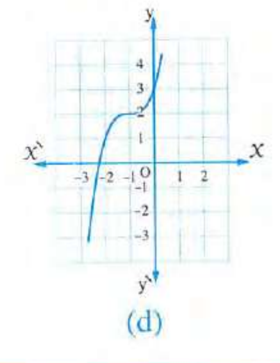
(a)



(b)



(c)



(d)

---

20 The S.S. of the equation : $\log_x (x + 6) = 2$ in $\mathbb{R}$ is ....

(a) $\{3 , -2\}$ (b) $\{3\}$ (c) $\{3 , 1\}$ (d) $\{6 , 1\}$

---

21 A man deposite L.E. 12000 in a bank that gives yearly interest 13 % , then the sum of money after 10 years approximately equals L.E. ....

(a) 40735 (b) 38735 (c) 36049 (d) 46030

---

22 In Δ LMN , m (∠ L) = 30° , MN = 7 cm. , then the diameter length of the circle passing through its vertices equals ....

(a) 7 cm. (b) 3.5 cm. (c) 14 cm. (d) $\frac{14}{\sqrt{2}}$ cm.

---

23 The solution set of the equation : $2^{x^2} = 16$ in $\mathbb{R}$ is ....

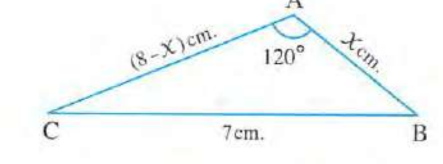
(a) $\{2\}$ (b) $\{-2\}$ (c) $\{2 , -2\}$ (d) $\{4 , -4\}$

24 The curve : $y = 3(\mathcal{X} - 5)^2 + 7$ under action of translation 3 units in the positive direction of the $\mathcal{X}$-axis and one unit in the negative direction of the y-aixs is the curve ....

(a) $y = 3(\mathcal{X} + 8)^2 + 6$ (b) $y = 3(\mathcal{X} - 8)^2 + 8$

(c) $y = 3(\mathcal{X} - 8)^2 + 6$ (d) $y = 3(\mathcal{X} + 8)^2 - 6$

25 In the opposite figure :



BC = 7 cm. , m (∠ A) = 120° , AB < AC

, then AC = ... cm.



(a) 5 (b) 3

(c) 8 (d) 4

26 The simplest form of the expression : $\frac{1}{\log_{\mathcal{X}} \mathcal{X} y z} + \frac{1}{\log_{y} \mathcal{X} y z} + \frac{1}{\log_{z} \mathcal{X} y z} =$ ....

(a) z (b) y (c) 1 (d) $\mathcal{X}$

27 In any triangle XYZ , XY : YZ = ...

(a) sin X : sin Y (b) sin Y : sin Z (c) sin Z : sin X (d) sin Z : sin Y

28 If the curve $y = f(\mathcal{X})$ represents a real function , then its image by translation 5 units vertically downward is $g(\mathcal{X}) =$ ....

(a) $f(\mathcal{X} - 5)$ (b) $f(\mathcal{X} + 5)$ (c) $f(\mathcal{X}) + 5$ (d) $f(\mathcal{X}) - 5$

Second Essay questions

Answer the following questions :

1 Showing steps , find the solution set of the equation :

$3^{2\mathcal{X} - 1} - 4 \times 3^{\mathcal{X}} + 9 = 0$, where $\mathcal{X}$ is a real number.

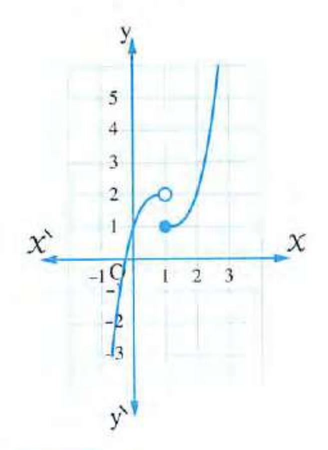
2 If the function $f : f(\mathcal{X}) = \frac{1}{\mathcal{X}}$, then find the domain of the function f and the coordinates of the symmetric point of the curve of this function , then find in $\mathbb{R}$ the solution set of the equation : $f\left(\frac{1}{\mathcal{X}}\right) = 4$

3 Find : $\lim_{\mathcal{X} \to 0} \frac{\sqrt{\mathcal{X} + 4} - 2}{\mathcal{X}}$

4 **Study the opposite figure , then find :**

(1) $f(1)$

(2) $\lim_{x \to 1} f(x)$



Model 6

Interactive test 6



First Multiple choice questions

Choose the correct answer from the given ones :

1 If $\lim_{x \to 4} \frac{x^2 + 7x + b}{x^2 - 6x + 8} = \frac{15}{2}$, then b = ...

(a) – 44 (b) 7 (c) – 8 (d) 8

2 The vertex point of the curve of the function $f : f(x) = x^2 + 3$ is ....

(a) (3 , 0) (b) (0 , 3) (c) (– 3 , 0) (d) (0 , – 3)

3 If $\log_a (x + 2) - \log_a (x - 1) = \log_a 4$, then x = ...

(a) – 2 (b) 2 (c) 1 (d) – 1

4 All the functions defined by the following rules are odd except ....

(a) $f(x) = \tan x$ (b) $f(x) = \csc x$ (c) $f(x) = 7x^3$ (d) $f(x) = \cos x$

5 $\lim_{x \to 0} \frac{x^2 - 1}{x}$ = ...

(a) zero (b) 1 (c) does not exist. (d) – 1

6 If $x^{\frac{3}{2}} = 64$, then x = ...

(a) 512 (b) 16 (c) 4 (d) 2

7 The area of the circle passing through the vertices of the equilateral triangle ABC whose side length is 9 cm. equals .... cm^2.

(a) 9π (b) $9\sqrt{3}\pi$ (c) 27π (d) 81π

8 If $f(x) = 3^{x}$, then the solution set in $\mathbb{R}$ of the equation : $f(x-2) + f(x-1) = 36$ equals ....

(a) $\{9\}$ (b) $\{4\}$ (c) $\{2\}$ (d) $\{3\}$

---

9 $\lim\limits_{h \to 0} \frac{(x+h)^7 - x^7}{h} =$ ....

(a) x^7 (b) $7x^6$ (c) zero (d) 1

---

10 In ΔABC , $a^2 + b^2 - c^2 =$ ....

(a) $\cos A$ (b) $a b \cos C$ (c) $\cos C$ (d) $2 a b \cos C$

---

11 The curve $g(x) = |x+3|$ is the same as the curve $f(x) = |x|$ by translation 3 units in the direction of ....

(a) $\overrightarrow{Ox}$ (b) $\overrightarrow{Ox'}$ (c) $\overrightarrow{Oy}$ (d) $\overrightarrow{Oy'}$

---

12 The solution set of the inequality : $|3 - 2x| \leq 1$ in $\mathbb{R}$ is ....

(a) $[1, 2]$ (b) $]1, 2[$ (c) $\mathbb{R} -]1, 2[$ (d) $\mathbb{R} - [1, 2]$

---

13 If $(2, 3)$ lies on the curve of an odd function , then the point .... lies on the curve of the same function.

(a) $(-2, -3)$ (b) $(2, -3)$ (c) $(-2, 3)$ (d) $(3, 2)$

---

14 The point of symmetry of the function $f : f(x) = \frac{2x-1}{x}$ is ....

(a) $(1, 1)$ (b) $(2, 1)$ (c) $(1, 2)$ (d) $(0, 2)$

---

15 $\lim\limits_{x \to 1} \frac{2x-4}{x-2} =$ ....

(a) 1 (b) 2 (c) -2 (d) zero

---

16 The range of the function $f : f(x) = \frac{5}{x} + 2$ is ....

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{2\}$ (c) $\{2\}$ (d) $\mathbb{R} - \{0\}$

---

17 The range of the function $f : f(x) = \begin{cases} 0 & , \quad x \leq 0 \\ 1 & , \quad x > 0 \end{cases}$ is ....

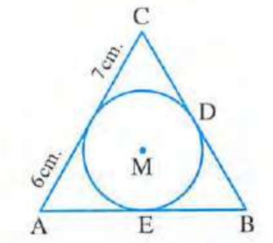
(a) $\{1\}$ (b) $\{0\}$ (c) $\mathbb{R}$ (d) $\{0, 1\}$

18 The radius length of the circumcircle of the triangle XYZ in which :

$x = 3$ cm. , $y = 5$ cm. , $z = 7$ cm. approximately equals .... cm.

(a) 6 (b) 8 (c) 4 (d) 2

19 **In the opposite figure :**



If the perimeter of Δ ABC = 42 cm. and the circle M is the inscribed circle in it , then m ($\angle$ A) = ...

(a) $53° \, 7'$ (b) $67° \, 23'$

(c) $36° \, 53'$ (d) $22° \, 37'$

20 If $5^{x-3} = 4^{3-x}$, then x = ...

(a) $\frac{5}{4}$ (b) 3 (c) $\frac{4}{5}$ (d) zero

21 The numerical value of the expression $\frac{\log 64}{\log 8}$ equals ....

(a) 2 (b) 8 (c) 80 (d) 72

22 In Δ DEF , m ($\angle$ D) = 80° , m ($\angle$ E) = 60° , if f = 12 cm. , then d = ... cm.

(a) $\frac{12 \sin 80°}{\sin 40°}$ (b) $\frac{12 \sin 80°}{\sin 60°}$ (c) $\frac{12 \sin 40°}{\sin 80°}$ (d) $\frac{12 \cos 80°}{\cos 40°}$

23 $\lim\limits_{x \to \infty} \frac{(2x+1)(4x-1)^2}{(2x+3)^3}$ = ...

(a) 4 (b) 32 (c) 1 (d) 8

24 If $\lim\limits_{x \to 1} \frac{b}{x+1} = 5$, then b = ...

(a) 5 (b) −1 (c) 1 (d) 10

25 In Δ ABC , if $b^2 = (c-a)^2 + ca$, then m ($\angle$ B) = ...

(a) 30° (b) 60° (c) 90° (d) 120°

26 The absolute inequality that represents mark of a student from 50 to 70 marks is ....

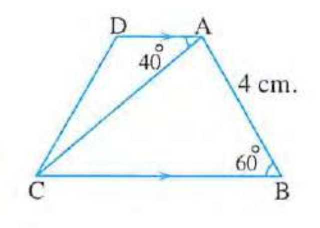
(a) $|x - 20| < 10$ (b) $|x - 60| < 10$

(c) $|x - 60| \le 10$ (d) $|x - 20| \le 10$

27 In Δ ABC , cos (A + B) = ...

(a) $\frac{a^2 + b^2 - c^2}{2ab}$ (b) $\frac{a^2 + c^2 - b^2}{2ab}$ (c) $\frac{b^2 + c^2 - a^2}{2bc}$ (d) $\frac{c^2 - a^2 - b^2}{2ab}$

28 **In the opposite figure :**



$\overline{AD} // \overline{BC}$, AB = 4 cm. , m (∠ DAC) = 40° , m (∠ B) = 60°

, then the length of $\overline{AC} \simeq$ .... cm.

(a) 5
(b) 3
(c) 2
(d) 4

Second Essay questions

Answer the following questions :

1 Graph the curve of the function $f : f(X) = |X + 2| + 1$ and deduce its range and discuss its monotoncity and its type whether it is even , odd or otherwise.

2 **Find :** $\lim\limits_{X \to \infty} \left(\sqrt{X^2 + 5X} - X\right)$

3 **Without using calculator find the value of :**

$\log_2 \frac{3}{25} + 5 \log_2 5 + \log_2 27 - \log_2 \frac{125}{12} - \log_2 243$

4 **Find :** $\lim\limits_{X \to 0} \frac{X^2}{3X^3 - 2X^2}$

Model 7

Interactive test 7



First Multiple choice questions

Choose the correct answer from the given ones :

1 The range of the function $f : f(X) = |X|$ is ....

(a) $[0 , \infty[$
(b) $]0 , \infty[$
(c) $]-\infty , 0]$
(d) $]-\infty , 0[$

2 In Δ ABC , $\frac{a}{a + b} = \frac{\sin A}{\text{.........}}$

(a) sin B
(b) sin C
(c) sin A + sin B
(d) sin A + sin C

3 In Δ ABC , if sin A = 2 sin C , BC = 6 cm. , then AB = ... cm.

(a) 2
(b) 3
(c) 4
(d) 6

4 The solution set in $\mathbb{R}$ of the equation : $x^{\frac{4}{3}} - 10\, x^{\frac{2}{3}} + 9 = 0$

(a) $\{1 , 27\}$ (b) $\{-1 , 1\}$
(c) $\{-1 , 1 , 27\}$ (d) $\{-1 , 1 , -27 , 27\}$

---

5 $\lim_{x \to \frac{\pi}{4}} \frac{\tan x}{x} =$ ....

(a) $\frac{\pi}{2}$ (b) $\frac{4}{\pi}$ (c) 1 (d) does not exist.

---

6 If $\sqrt[3]{x^2} = 4$, then $x =$ ....

(a) 8 (b) -8 (c) ± 8 (d) ± 4

---

7 In Δ ABC , $b^2 + c^2 - a^2 = 2\, b\, c \times$ ....

(a) $\sin (90° - B)$ (b) $\sin (90° - A)$ (c) $\cos B$ (d) $\cos (90° - B)$

---

8 $\lim_{x \to 1} \frac{4 - \sqrt{x + 15}}{1 - x^2} =$ ....

(a) 16 (b) -16 (c) $\frac{1}{16}$ (d) $\frac{-1}{16}$

---

9 If the radius length of the circle passing throught the vertices of Δ ABC equals 6 cm.

, then $\frac{2\, a}{\sin A} =$ .... cm.

(a) 12 (b) 6 (c) 18 (d) 24

---

10 The solution set of the equation : $(\log_5 y)^2 - 7 \log_5 y + 12 = 0$ in $\mathbb{R}$ is ....

(a) $\{25 , 125\}$ (b) $\{25 , 625\}$ (c) $\{\frac{1}{25} , 625\}$ (d) $\{125 , 625\}$

---

11 The solution set of the equation : $|x| + 3 = 0$ in $\mathbb{R}$ is ....

(a) $\{3\}$ (b) $\{-3\}$ (c) $\{0\}$ (d) $\varnothing$

---

12 If $\lim_{x \to 1} \frac{x^2 - k^2}{x + 2} = -1$, then $k =$ ....

(a) 2 (b) -2 (c) 4 (d) ± 2

---

13 If f is an odd function , then $\frac{5\, f(x) + 2\, f(-x)}{4\, f(x)} =$ ....

(a) $\frac{7}{4}$ (b) $\frac{3}{4}$ (c) $\frac{1}{2}$ (d) $\frac{5}{4}$

---

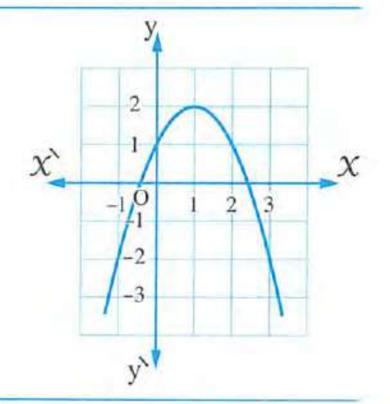
14 In Δ XYZ , $x = 5$ cm. , $y = 7$ cm. , $m(\angle Z) = 65°$, then z approximately equals .... cm.

(a) 7.6 (b) 6.7 (c) 7.8 (d) 8.7

15 If $\log_2 x = 3$, then $\log_x 2 =$ ....

(a) 2 (b) $\frac{1}{3}$ (c) 8 (d) 9

16 The rule of the function represented in the opposite figure is $f(x) =$ ....



(a) $(x-2)^2 + 1$

(b) $-(x-2)^2 + 1$

(c) $-(x-1)^2 + 2$

(d) $(-x+1)^2 + 2$

17 The solution set of the equation : $|2x - 1| = 5$ in $\mathbb{R}$ is ....

(a) $\{3\}$ (b) $\{-2\}$ (c) $\varnothing$ (d) $\{3, -2\}$

18 If $f(x) = \begin{cases} x - 4 & , \quad x \geq 4 \\ g(x) & , \quad x < 4 \end{cases}$ is symmetric about the straight line $x = 4$

, then the function g is ....

(a) an increasing function. (b) a decreasing function.

(c) an even function. (d) a constant function.

19 $\lim\limits_{x \to 0} \frac{3x + 2x^{-1}}{x + 4x^{-1}} =$ ....

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) 4

20 The domain of the function $f : f(x) = \frac{x+2}{x^2 - 9}$ is ....

(a) $\{3, -3\}$ (b) $\mathbb{R} - \{3, -3\}$ (c) $\mathbb{R} - \{3\}$ (d) $\mathbb{R}$

21 $\lim\limits_{x \to \infty} \left(\frac{1}{x-2} + 1\right) =$ ....

(a) 2 (b) 1 (c) zero (d) ∞

22 The solution set in $\mathbb{R}$ of the equation : $\sqrt{x^2 - 6x + 9} = 9$ is ....

(a) $\{-6, 12\}$ (b) $\{12\}$ (c) $\{-6\}$ (d) $\{6, -12\}$

23 If the curve of the function $f : f(x) = \log_4 (1 - a x)$ passes through $\left(\frac{1}{8}, -\frac{1}{2}\right)$

, then a = ...

(a) 3 (b) 2 (c) 4 (d) 8

24 In Δ ABC , if b = c , then cos C = ...

(a) $\frac{a}{2b}$ (b) $\frac{b}{2c}$ (c) $\frac{2b}{c}$ (d) $\frac{2b}{a}$

25 The solution set of the inequality $|2x+3| \leq 7$ in $\mathbb{R}$ is ....

(a) $]-5 , 2[$ (b) $]-2 , 5[$ (c) $[-2 , 5]$ (d) $[-5 , 2]$

26 $\lim_{x \to \frac{\pi}{2}} (1 - \cos x + \sin x) =$ ....

(a) -1 (b) 2 (c) 1 (d) zero

27 Δ ABC in which a = 4 cm. , b = $4\sqrt{3}$ cm. , c = 8 cm. , then sine of the smallest angle measure in it = ...

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) 1 (d) zero

28 In Δ ABC , if m ($\angle$ C) = 60° , $a^2 + b^2 - c^2 = k\,a\,b$, then k = ...

(a) $\frac{1}{2}$ (b) 2 (c) 1 (d) -1

Second Essay questions

Answer the following questions :

1 **Without using the calculator , find the value of :**

$$\log_2 \frac{3}{25} + 5\log_2 5 + \log_2 27 - \log_2 \frac{125}{12} - \log_2 243$$

2 **Find :** $\lim_{x \to \infty} \frac{2x-3}{\sqrt[3]{125x^3+5}}$

3 Graph the function $f : f(x) = \begin{cases} x^2 & , \quad x < 0 \\ x & , \quad x \geq 0 \end{cases}$ and determine the range and monotonicity.

4 $\lim_{x \to 0} \frac{(x+2)^2 - 4}{x^2 + x}$

Model 8

Interactive test 8



First Multiple choice questions

Choose the correct answer from the given ones :

1 If $\log_2 X = 3$, then $X =$ ....

(a) 6 (b) 2 (c) 9 (d) 8

2 $\lim\limits_{X \to 0} \sqrt{64 + X^2} =$ ....

(a) 64 (b) 16 (c) 8 (d) otherwise.

3 The diameter length of the circle inscribed in an equilateral triangle whose side length is $4\sqrt{3}$ cm. equals .... cm.

(a) $2\sqrt{3}$ (b) $4\sqrt{3}$ (c) 4 (d) 8

4 If $y = f(X)$ is a real function , then its image by translation 2 units right is $g(X) =$ ....

(a) $f(X - 2)$ (b) $f(X + 2)$ (c) $f(X) + 2$ (d) $f(X) - 2$

5 The number of possible solutions of Δ ABC where $m(\angle A) = 60°$, $b = 3$ cm. , $a = 5$ cm. is ....

(a) 1 (b) 2

(c) no solution. (d) an infinite number of triangles.

6 $\lim\limits_{X \to \text{zero}} \frac{X^2 + X}{X} =$ ....

(a) zero (b) 1 (c) 2 (d) 3

7 If $f(X) = 5^X$, then the solution set in $\mathbb{R}$ of the equation : $f(X) + f(X - 1) = 150$ equals ....

(a) $\{3\}$ (b) $\{5\}$ (c) $\{2\}$ (d) $\{3 , 5\}$

8 In Δ ABC , $\cos(A + B) =$ ....

(a) $\frac{a^2 + b^2 - c^2}{2ab}$ (b) $\frac{a^2 + c^2 - b^2}{2ac}$ (c) $\frac{b^2 + c^2 - a^2}{2bc}$ (d) $\frac{c^2 - a^2 - b^2}{2ab}$

9 The vertex point of the curve of $f : f(X) = X^2 + 1$ is ....

(a) $(1 , 0)$ (b) $(-1 , 0)$ (c) $(0 , 1)$ (d) $(0 , -1)$

10 $\lim_{x \to 3} \frac{x^2 - 7x + 12}{x - 3} = \dots\dots$

(a) 1 (b) -1 (c) -2 (d) 7

11 The domain of the function $f : f(x) = \frac{3}{\sqrt{x+4}}$ equals $\dots\dots$

(a) $[-4, \infty[$ (b) $]-\infty, 4]$ (c) $]-4, \infty[$ (d) $]-\infty, -4[$

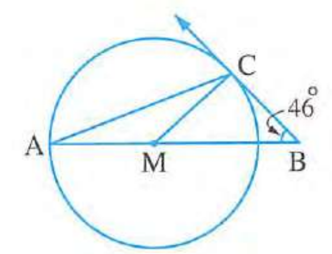
12 **In the opposite figure :**

If AC = 20 cm.

, then the perimeter of Δ ACM $\simeq \dots\dots$ cm.

(a) 41.6 (b) 43.5

(c) 45 (d) 47.5



13 $\log 2 + \log 5 = \dots\dots$

(a) 1 (b) $\log 7$ (c) 10 (d) $\log 5$

14 The domain of the function $f : f(x) = \sqrt{9 - x}$ is $\dots\dots$

(a) $\mathbb{R}$ (b) $\mathbb{R} - \{9\}$ (c) $]-\infty, 9]$ (d) $[9, \infty[$

15 In Δ ABC , c = 19 cm. , $m(\angle A) = 112°$, $m(\angle B) = 33°$, then the area of Δ ABC to the nearest cm^2 equals $\dots\dots$ cm^2.

(a) 64 (b) 128 (c) 185 (d) 159

16 The solution set of the inequality : $|x| - 1 > 0$ in $\mathbb{R}$ is $\dots\dots$

(a) $\mathbb{R} - [-1, 1]$ (b) $]-1, 1[$ (c) $\mathbb{R} -]-1, 1[$ (d) $[-1, 1]$

17 $\lim_{x \to -2} \left|\frac{1}{x}\right| = \dots\dots$

(a) 1 (b) -1 (c) $-\frac{1}{2}$ (d) $\frac{1}{2}$

18 $\lim_{x \to \infty} \left(\frac{3x^2 + 2x + 1}{x^2 - 3x + 2}\right)^4 = \dots\dots$

(a) 3 (b) 9 (c) 27 (d) 81

19 Which of the following does not equal $\left(\sqrt[5]{x^4}\right)$?

(a) $\left(\sqrt[5]{x}\right)^4$ (b) $\sqrt[4]{x^5}$ (c) $x^{\frac{4}{5}}$ (d) $\left(x^{\frac{1}{5}}\right)^4$

20 If the function f is even in $[c , d]$, then $c + d =$ ....

(a) $2c$ (b) $2d$ (c) $c - d$ (d) zero

21 If $\sqrt[3]{x^2} = 9$, then $x \in$ ....

(a) $\{27\}$ (b) $\{27 , -27\}$ (c) $\{1\}$ (d) $\varnothing$

22 If $\left(\frac{1}{2}\right)^{a^2 - a - 2} = 1$, where $a >$ zero , then $a =$ ....

(a) 1 (b) -3 (c) 2 (d) 3

23 Which of the functions defined by the following rules represents an exponential function increasing on its domain $\mathbb{R}$?

(a) $y = 3\,(1.05)^x$ (b) $y = \frac{1}{3}\left(\frac{1}{1.5}\right)^x$ (c) $y = 3 + (0.5)^x$ (d) $y = (0.5)^x$

24 In Δ ABC , if $2 \sin A = 3 \sin B = 4 \sin C$, then $a : b : c =$ ....

(a) $2 : 3 : 4$ (b) $4 : 3 : 2$ (c) $3 : 4 : 6$ (d) $6 : 4 : 3$

25 If $\lim\limits_{x \to a} \frac{a x}{3} = 12$, then $a =$ ....

(a) ± 12 (b) ± 6 (c) 4 (d) $\frac{1}{6}$

26 If $|x| + |x - 3| = 3$, then $x(x - 3)$ .... zero

(a) $<$ (b) $>$ (c) $\leq$ (d) $\geq$

27 In Δ XYZ , if $x = y$, then $\cos X =$ ....

(a) $\frac{2y^2}{z}$ (b) $\frac{z}{2y}$ (c) $\frac{z}{4x}$ (d) $\frac{y}{2x}$

28 The perimeter of Δ ABC , in which $b = 11$ cm. , $m(\angle A) = 67°$, $m(\angle C) = 46°$ equals .... (to the nearest cm.)

(a) 22 (b) 38 (c) 31 (d) 27

Second Essay questions

Answer the following questions :

1 **Without using the calculator find the value of :**

$$\log_3 54 - \log_3 \frac{8}{15} + \log_3 \frac{4}{5}$$

2 **Find :** $\lim\limits_{x \to 5} \frac{x^2 - 5x}{\sqrt{x+4} - 3}$

3 Graph the curve of the function $f : f(x) = (x + 2)^3 + 1$ and from the graph deduce the range and its monotony and its type whether it is even , odd or otherwise.

4 $\lim\limits_{x \to \infty} \frac{5x^{-3} + 4x^{-2} - 3}{7x^{-3} - 2x^{-2} + 8}$

Model 9

Interactive test 9 

First Multiple choice questions

Choose the correct answer from the given ones :

1 The solution set of the equation : $\log_{(x+3)} 125 = 3$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{3\}$ (c) $\varnothing$ (d) $\{2\}$

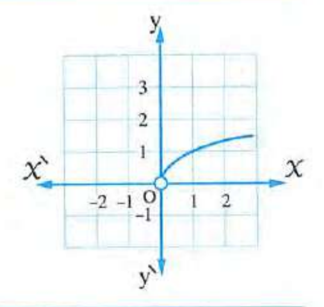
2 Δ LMN in which m ($\angle$ L) = 30° , m = 9 cm. has two solutions when ℓ = ... cm.

(a) 6 (b) 10 (c) 11 (d) 2

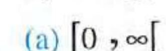
3 If $4 = \log_2 x$, then the equivalent exponential form is ....

(a) $x^2 = 4$ (b) $x^4 = 2$ (c) $x = 2^4$ (d) $2^x = 4$

4 The domain of the function represented by the opposite figure is ....



(a) $[0, \infty[$ (b) $]0, \infty[$



(c) $]-\infty, 0[$ (d) $]0, 3[$

5 If $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x + 1) - f(x) = x - 1$, then $f(10) - f(9) =$ ....

(a) 1 (b) 9 (c) 8 (d) 18

6 $\lim\limits_{x \to 0} \frac{x^2 + x}{x^3 + x} =$ ....

(a) $\frac{2}{3}$ (b) 1 (c) zero (d) does not exist.

7 The image of the curve $f(X) = |X| - 5$ by translation 3 units in the direction of $\overrightarrow{OX}$ and 5 units in the direction of $\overrightarrow{Oy}$ is ....

(a) $g(X) = |X - 3| + 5$　(b) $g(X) = |X - 3|$

(c) $g(X) = |X - 3| - 10$　(d) $g(X) = |X + 3|$

---

8 $\lim\limits_{X \to \infty} \frac{\sqrt{4X^2 + 7} + 3X}{2X + 9} =$ ....

(a) $\frac{3}{2}$　(b) $\frac{5}{2}$　(c) $\frac{5}{4}$　(d) $\frac{5}{9}$

---

9 The solution set of the inequality : $|X - 1| < -2$ in $\mathbb{R}$ is ....

(a) $]-1, 3[$　(b) $\mathbb{R} - [-1, 3]$　(c) $]-2, 2[$　(d) $\varnothing$

---

10 In Δ ABC , c (a cos B + b cos A) = ...

(a) a^2　(b) b^2　(c) c^2　(d) $2c^2$

---

11 ABCD is a parallelogram in which : AB = 9 cm. , BC = 13 cm. , AC = 20 cm. , then the length of $\overline{BD}$ equals .... cm.

(a) 10　(b) 5　(c) 18.5　(d) 20

---

12 If the domain of the function $f : f(X) = \frac{2}{X^2 - 6X + k}$ is $\mathbb{R} - \{3\}$, then k = ...

(a) 3　(b) -3　(c) 9　(d) ± 9

---

13 $\lim\limits_{X \to 4} \frac{X^3 - 64}{X - 4} =$ ....

(a) 96　(b) 48　(c) 32　(d) 16

---

14 If $f(X) = \frac{\sqrt{X^2 - 2X + 1}}{X - 1}$, then the range of the function f is ....

(a) $\{1\}$　(b) $\mathbb{R}$　(c) $[-1, 1[$　(d) $\{-1, 1\}$

---

15 The solution set of the following equation in $\mathbb{R}$: $\log_2 X - \frac{3}{\log_2 X} = 2$ equals ....

(a) $\{\frac{1}{2}\}$　(b) $\{8, 2\}$　(c) $\{8, \frac{1}{2}\}$　(d) $\{2\}$

---

16 $\lim\limits_{h \to 0} \frac{(X + h)^9 - X^9}{h} =$ ....

(a) X^9　(b) $9X^8$　(c) zero　(d) does not exist.

---

17 $\log_3 15 - \log_3 5 =$ ....

(a) 3　(b) 1　(c) zero　(d) -3

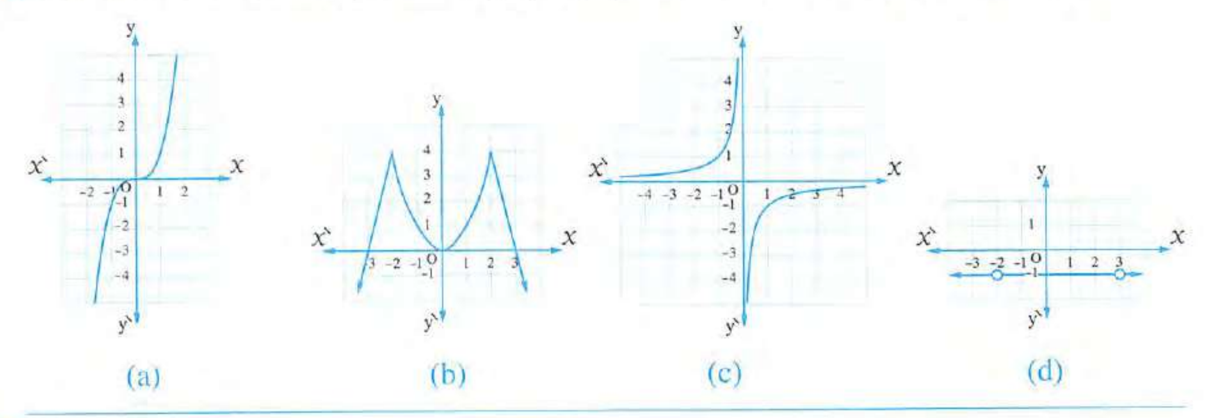
18 If ABC is a triangle in which a = 4 cm. , b = $4\sqrt{3}$ cm. , c = 8 cm. , then sine of its smallest angle equals ....

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) 1 (d) zero

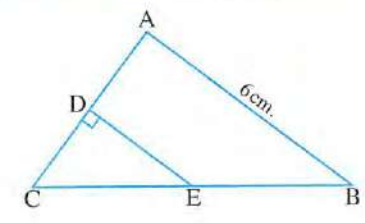
19 If $x = 5 + 2\sqrt{6}$, then $\log\left(\frac{1}{x} + x\right) =$ ....

(a) 1 (b) $5 - 2\sqrt{6}$ (c) 10 (d) $5 + 2\sqrt{6}$

20 Which of the functions represented graphically as follows is neither even nor odd ?



21 **In the opposite figure :**



If tan (∠ DEC) = $\frac{3}{4}$, then the radius length of the circumcircle of Δ ABC = ... cm.

(a) 9 (b) 5.7

(c) $4\frac{3}{4}$ (d) 3.75

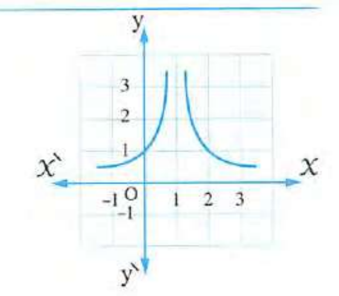
22 The solution set of the equation : $\frac{1}{\log_2 x} + \frac{1}{\log_3 x} = 2$ is ....

(a) $\{\sqrt{6}\}$ (b) $\{-\sqrt{6}\}$ (c) $\{\sqrt{6}, -\sqrt{6}\}$ (d) $\{6\}$

23 If $\sqrt[3]{x^2} = 9$, then $x \in$ ....

(a) $\{-81, 81\}$ (b) $\{-27, 27\}$ (c) $\{-9, 9\}$ (d) $]3, 7[$

24 **In the opposite figure :**



$f(x) =$ ....

(a) $\frac{1}{x-1}$ (b) $\frac{1}{|x-1|}$

(c) $|x^2 - 1|$ (d) $|x-1|^2$

25 $\lim_{x \to \infty} \left(x - \sqrt{x^2 + 5x}\right) = \cdots\cdots\cdots$

(a) 2 (b) 3 (c) $\frac{-5}{2}$ (d) $\frac{1}{4}$

26 In Δ XYZ , if $\sin X = 2 \sin Z$, YZ = 6 cm. , then the length of $\overline{XY} = \cdots\cdots\cdots$ cm.

(a) 12 (b) 2 (c) 6 (d) 3

27 In Δ ABC , if a = 4 cm. , b = 7 cm. , m ($\angle$ C) = 120° , then the area of the triangle = $\cdots\cdots\cdots$ cm^2.

(a) $7\sqrt{3}$ (b) $14\sqrt{3}$ (c) 7 (d) 14

28 In any triangle ABC , cos A = $\cdots\cdots\cdots$

(a) $-(\cos B + \cos C)$ (b) $\cos B - \cos C$

(c) $\cos (B + C)$ (d) $-\cos (B + C)$

Second Essay questions

Answer the following questions :

1 Graph the function $f : f(x) = \sqrt{x^2 - 4x + 4}$ and determine its range and discuss its monotony.

2 Graph the curve of the function $f : f(x) = x^3 - 5$ and from the graph discuss the monotonicity of the function and show its type whether it is even , odd or otherwise.

3 **Find :** $\lim_{x \to 0} \frac{\sqrt{9x + 16} - 4}{x}$

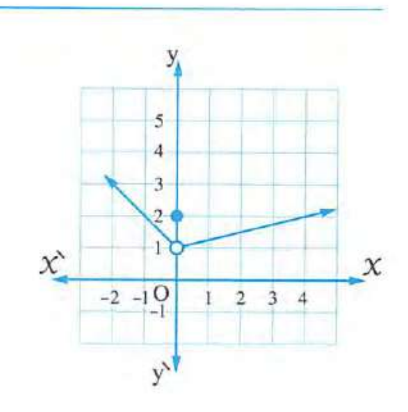
4 **Study the opposite figure , then find :**

(1) $f(0)$

(2) $\lim_{x \to 0} f(x)$

(3) $f(2)$

(4) $\lim_{x \to 2} f(x)$



Model 10

Interactive test 10



First — Multiple choice questions

Choose the correct answer from the given ones :

1 The solution set of the equation $\log_3 (x-4) + \log_3 (x+4) = 2$ in $\mathbb{R}$ is ....

(a) $\{5\}$ (b) $\{5, -5\}$ (c) $\{3, -3\}$ (d) $\{3, 5\}$

2 $\lim\limits_{x \to 0} \frac{(x+2)^2 - 4}{x^2 + x} =$ ....

(a) zero (b) 2 (c) 4 (d) 8

3 If the ratio among the measures of the angles of a triangle is 8 : 3 : 1 , then the ratio between the longest two sides in the triangle is ....

(a) $\sqrt{3} : 2$ (b) $\sqrt{6} : 2$ (c) 8 : 3 (d) 8 : 5

4 $\lim\limits_{x \to -3} \frac{\sqrt{x+7} - 2}{x+3} =$ ....

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) 4

5 If $3^a = 4^b$, then : $9^{\frac{a}{b}} + 16^{\frac{b}{a}} =$ ....

(a) 7 (b) 12 (c) 20 (d) 25

6 If $\lim\limits_{x \to \infty} \frac{3k|x|}{4x+3} = 6$, then k = ...

(a) 6 (b) $\frac{3}{4}$ (c) 8 (d) 3

7 If $f(x) = x^3$, then the image of the curve of f by reflection in x-axis and translation 3 units in the direction of $\overrightarrow{Ox}$ and two units in the direction of $\overrightarrow{Oy}$ is ....

(a) $-(x-3)^3 - 2$ (b) $-(x+3)^3 + 2$

(c) $-(x+3)^3 - 2$ (d) $-[(x+3)^3 + 2]$

8 If $2^{x-3} = 1$, then $x =$ ....

(a) -3 (b) 3 (c) 1 (d) zero

9 If $a \in \mathbb{R}^+ - \{1\}$, $x , y \in \mathbb{R}^+$, $\log_a y \neq 0$, then $\frac{\log_a x}{\log_a y} =$ ....

(a) $\log_a \frac{x}{y}$ (b) $\log_a (x - y)$ (c) $\log_a x - \log_a y$ (d) $\log_y x$

10 $\frac{1}{\log_2 30} + \frac{1}{\log_3 30} + \frac{1}{\log_5 30} = \dots\dots$

(a) 1 (b) $\log_6 5$ (c) log 30 (d) 30

11 In Δ ABC , m ($\angle$ A) = 112° , m ($\angle$ B) = 33° , c = 19 cm.
, then b to the nearest cm. = ... cm.

(a) 16 (b) 17 (c) 18 (d) 20

12 If $2^X = 20$, $n < X < n + 1$, n is an integer , then n = ...

(a) 4 (b) 5 (c) 6 (d) 10

13 In Δ XYZ , $y^2 + z^2 - X^2 = 2\,y\,z \times$ ....

(a) cos X (b) sin Z (c) cos Z (d) sin X

14 $\lim\limits_{X \to 1} \frac{X^2 + 5X - 6}{X^2 - 1} = \dots\dots$

(a) 1 (b) 5 (c) 6 (d) 3.5

15 The exponential function whose base is a , is increasing if ....

(a) a > 0 (b) a > 1 (c) 0 < a < 1 (d) a = 1

16 $\lim\limits_{X \to 2} \frac{X^5 - 32}{X^4 - 16} = \dots\dots$

(a) 2 (b) 20 (c) $\frac{5}{4}$ (d) $\frac{5}{2}$

17 If f is an odd function , a $\in$ the domain of f , then $f(a) + f(-a) = \dots\dots$

(a) $2f(a)$ (b) $2f(-a)$ (c) zero (d) $f(a)$

18 The solution set in $\mathbb{R}$ of the equation : $|X - 3| = |9 - 2X|$ equals ....

(a) $\{4\}$ (b) $\{4, 6\}$ (c) $\{6\}$ (d) $\{2, 6\}$

19 The range of the function $f : f(X) = \begin{cases} 2X + 3 & , X > 3 \\ 9 & , X < 3 \end{cases}$ is ....

(a) $\{3\}$ (b) $\mathbb{R}$ (c) $]9, \infty[$ (d) $[9, \infty[$

20 Diameter length of the circumcircle of equilateral triangle whose side length $10\sqrt{3}$ cm. equals .... cm.

(a) 5 (b) 10 (c) 15 (d) 20

21 $\lim\limits_{X \to 0} \frac{(X + 1)^{12} - 1}{X} = \dots\dots$

(a) 1 (b) 6 (c) zero (d) 12

22 If the area of Δ ABC is "$\mathcal{X}$" and the radius length of its circumcircle is "r" , then $\frac{4 r \mathcal{X}}{a b c} =$ ....

(a) $\frac{a}{\sin A}$ (b) cos A (c) 1 (d) r

23 If $f(\mathcal{X}) = 7^{\mathcal{X}+1}$, then the value of $\mathcal{X}$ which satisfies : $f(2\mathcal{X}-1) + f(\mathcal{X}-2) = 50$ equals ....

(a) 1 (b) 7 (c) zero (d) 2

24 If L , M are the roots of the equation : $\mathcal{X}^2 - 4\mathcal{X} + 4 = 0$, then $\log_2 L + \log_2 M =$ ....

(a) 2 (b) -2 (c) -4 (d) 4

25 If $\sqrt{\mathcal{X}^2 - 2\mathcal{X} + 1} > 4$, then $\mathcal{X} \in$ ....

(a) $[-3 , 5]$ (b) $]-3 , 5[$ (c) $\mathbb{R} -]-3 , 5[$ (d) $\mathbb{R} - [-3 , 5]$

26 In triangle ABC , a = 4 cm. , b = 7 cm. , m ($\angle$ A) = 112° , then the number of triangles satisfy these conditions equals ....

(a) 1 (b) 2 (c) 0 (d) infinite number.

27 In triangle ABC , m ($\angle$ A) : m ($\angle$ B) : m ($\angle$ C) = 2 : 3 : 4 , AB = 12 cm. , then the length of $\overline{AC} \simeq$ .... cm.

(a) 10 (b) 11 (c) 16 (d) 18

28 In Δ ABC : $\frac{c^2 - a^2 - b^2}{2 a b} =$ ....

(a) cos (A + B) (b) cos C (c) sin (C + 90°) (d) cos (B + C)

Second Essay questions

Answer the following questions :

1 **Find :** $\lim\limits_{\mathcal{X} \to 2} \frac{(\mathcal{X}-1)^6 - 1}{\mathcal{X} - 2}$

2 **Without using the calculator prove that :** $\log_5 \frac{15}{7} + \log_5 \frac{35}{3} - \log_5 \frac{1}{5} = \log_2 8$

3 Determine the type of the function $f : f(\mathcal{X}) = \mathcal{X}^2 + \sin \mathcal{X}$ whether it is even , odd or otherwise.

4 $\lim\limits_{\mathcal{X} \to \infty} (\mathcal{X}^3 + 5\mathcal{X}^2 + 1)$



كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



خطوة 1

خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق

خطوة 5
اختيار A4

خطوة 6